US NAVY DESTROYER ESCORTS OF WORLD WAR II

MARK LARDAS

ILLUSTRATED BY ADAM TOOBY
AND IRENE CANO RODRÍGUEZ

NEW VANGUARD 289

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US NAVY DESTROYER ESCORTS OF WORLD WAR II

INTRODUCTION

As morning broke October 25, 1944, the 13 ships of "Taffy 3," prepared for the day's combat. The whimsically-named task unit comprised six slow escort carriers, and their seven-ship screen: three destroyers and four destroyer escorts. They were steaming in the Philippine Sea, a few miles off the island of Samar. The carriers, Casablanca-class "jeep carriers" which carried 24 aircraft and could reach 19 knots with a following wind, were expected to do the heavy work that day. Their aircraft were scheduled to provide ground support for the US troops ashore at Leyte, after the previous week's landing. Their screen was there to protect them from attacking Japanese submarines and aircraft. Yet the dim light of dawn brought a surprise. To the north and east, coming from the San Bernardino Strait was the smoke of warships – enemy warships. It was Japan's Central Force: four battleships, including *Yamato* – the world's largest – eight cruisers, and 11 destroyers. Having evaded detection, they were approaching gunnery range and could cruise faster than the jeep carriers' top speed.

Despite the disparity in force the screen did not hesitate. After laying a smokescreen to hide the carriers, they threw themselves at the Japanese fleet, buying time to allow the carriers to escape. Seven small warships, including four destroyer escorts carrying but two 5in guns and three torpedo tubes, charged the Japanese fleet. Over the next three hours, the US destroyers and destroyer escorts struck repeatedly at the Japanese. All four destroyer escorts launched torpedoes at the Japanese cruisers and battleships. One hit the cruiser *Chokai*. A second destroyer escort was credited with sinking a Japanese cruiser. Torpedoes expended, the destroyer escorts attacked with guns.

The destroyers and destroyer escorts of Taffy 3 lay down smoke to protect the escort carriers, prior to making a torpedo attack on the battleships and cruisers of the Japanese Central Force at the Battle of Samar. A destroyer is in the foreground, with a destroyer escort in the background, right. (USNHHC)

The Black Swan-class sloop *Erne*. The Black Swans were one of several classes of ships rated as frigates or sloops built by the Royal Navy for antisubmarine duty. They were comparable in size and performance to US destroyer escorts. (AC)

Two emptied their magazines firing. Finally, at 0920hrs the Japanese had enough. Having sunk one escort carrier, two destroyers, and one destroyer escort for the loss of three Japanese heavy cruisers they broke off the battle.

The destroyer escorts that fought so gallantly off Samar were ships the US Navy really did not want, and ordered reluctantly. They were intended to fight submarines, but most arrived on the battlefield after the submarine threat was tamed. They were largely manned by reserve officers and recruits just out of Navy boot camp. Most of the sailors manning these ships had never been to sea before. Yet throughout World War II they fought as they had fought off Samar, with magnificent courage, and a willingness to bring everything they had into battle. This is their story.

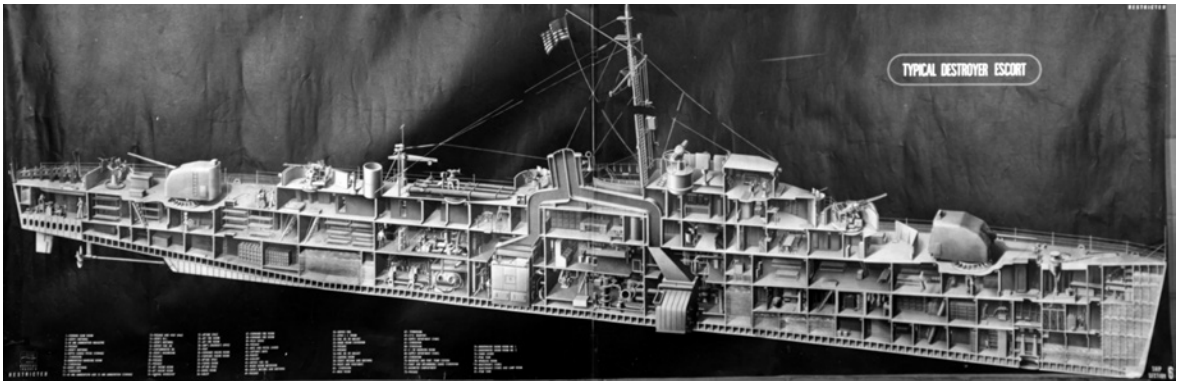
DESIGN AND DEVELOPMENT

The US Navy never wanted destroyer escorts. Mass-producing a second-class destroyer optimized for antisubmarine warfare was near the bottom of the Navy's list of priorities. There were many reasons for the Navy to avoid building them and (to the Navy) few good reasons to order them. Despite the Navy's effort to avoid the class of ships known as destroyer escorts, in the end it ordered over 1,000 of these ships, and built over 500.

In many ways, the Navy's worst fears about these ships were realized. By the time they arrived on the battlefield, the battle for which they were intended had already been won (largely by a different weapon, the antisubmarine aircraft). Despite their inadequacy for post-war needs, the surviving ships were too new to simply discard, and their existence blocked construction of appropriate replacements for over a decade. Yet while destroyer escorts were not the war-winning weapon their advocates claimed they would be, by the war's end they proved useful and created a record for intrepid service equaled by few other warship types. Their crews set a standard for perseverance, improvisation, and determination rarely matched in naval history.

Origins: The austere destroyer

By 1939, the US Navy was evaluating its mobilization needs should war erupt. Prior to 1939 no nation, including Germany, believed the U-boat would be as big a threat to commerce as it had been in World War I. By January 1940, everyone began re-evaluating that conviction. Aircraft and



A cutaway showing the interior of a Rudderow-class destroyer escort. Note the low bridge structure, steam propulsion plant, and 5in/38 gun turrets. These are the main differences between this class of ship and the earlier diesel-powered long-hull designs. The internal arrangements were otherwise identical. (USNHHC)

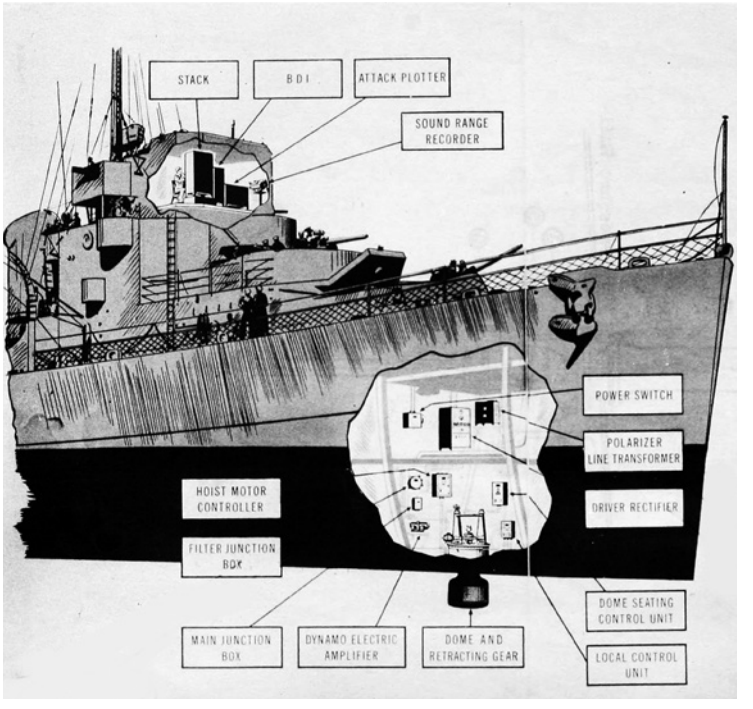
sonar at that point had not proved to be the antisubmarine nemesis they were expected to have become. The United States, along with Great Britain, was examining new types of antisubmarine ships. Among the US Navy's considerations was that of the escort destroyer, a stripped-down destroyer optimized for antisubmarine warfare. This design would sacrifice size, speed, and offensive armament to produce a warship capable of fighting submarines which could be built more quickly and more cheaply than a fleet destroyer. The fleet destroyers being designed and built in 1939 included the Fletcher and Sumner-classes. These were 376ft long, displaced between 2,100 and 2,300 tons, and carried five or six 5in/38 dual-purpose guns, and ten torpedo tubes. They were designed for a speed of 36 to 37.5 knots. The previous Benson- and Gleaves-classes displaced around 1,650 tons, went 35–36 knots and had five 5in/38s and one or two quintuple-mount torpedo tubes. All carried depth charge racks, but only the Fletcher and Sumner had depth-charge launchers. Yet all were suited to antisubmarine duties.

The desired escort destroyer would displace 1,200 tons, have a length around 300ft, a speed of 25 knots, and carry armament capable of sinking surfaced or submerged submarines. Adequate for convoy escort duties, these ships could substitute for fleet destroyers in a convoy's screen, releasing destroyers for use in the battle fleet. Britain pursued this approach with their Black Swan-class sloops, Flower-class corvettes, and Hunt-class destroyers. None proved completely satisfactory. The corvettes were slow and lightly armed. The Hunts had insufficient range for open-ocean service. In 1939 the Navy's General Board was unenthusiastic about an austere destroyer. The Navy never had enough fleet destroyers. They viewed an austere design, an escort destroyer, as a trap. Resources going into escort destroyer production would come from fleet destroyer construction. The US was still at peace. Why not build more fleet destroyers instead of filling building slips with keels for less capable ships?

Building small fleet destroyers similar to the 1,500-ton Farragut-class or perhaps building more Gleaves-class ships with improved antisubmarine capability was considered. This was discarded after the Navy realized off-the-shelf steam engines were too large for Farragut hulls, and would need to be specially ordered, negating any savings in resources. The Navy deferred the decision to make escort destroyers, whether of austere or small fleet designs, concentrating on increasing production of new designs. Over the next two years, the Navy considered several proposals to build small destroyers – between 750 and 1,200 tons – with a battery of 5in dual-purpose guns and

capable of anywhere from 25 to 35 knots. These included internal naval designs and unsolicited designs submitted by William Francis Gibbs, chief naval architect for Gibbs and Cox. Including two designs offered by Gibbs, the Navy considered six different austere destroyer designs between August 1940 and February 1941.

None of these designs went beyond the planning stage. They could not be built, lacked the range for ocean service, or cost almost as much as a fleet destroyer. Building an austere destroyer for escort duties was estimated to cost $6.8 million to an estimated $8.1 million for a repeat Gleaves. The conventional fleet destroyer appeared to be the best bargain. Yet the Navy kept looking at escort destroyer designs. In February 1941, the General Board called for yet another simplified destroyer. This one was to have a speed of 22 to 24 knots, with a waterline length of 280ft. It would have a 12,000 shaft horsepower (shp) engine, and mount two single-purpose (surface only) guns, either the old 5in/51 caliber or 4in/50 caliber. Endurance would be 6,000nmi at 12 knots, a speed which allowed the design to escort fast convoys across the Atlantic. The ships would have one triple torpedo tube mount. For anti-aircraft protection, it would have one quad 40mm Bofors aft and two single 20mm amidships. The design was modified. More antiaircraft capability was desired. Two 5in/38 or three 3in/50 dual-purpose guns replaced the original main battery. Light antiaircraft batteries were increased, adding more 20mm guns. This design, which displaced 1,225 tons, became the basis of the World War II destroyer escort.



A stylized diagram from a US Navy sonar manual showing the layout of the sonar system aboard a destroyer escort. The listening equipment, including a retracting dome containing the sonar gear, was in the bow while the sonar room, where sound information collected was interpreted, was in the superstructure near the bridge and combat information center. (AC)

In May 1941, the Navy ordered 50 of these ships, and then almost immediately cancelled the order. The fleet destroyer was still viewed to be better value. The Navy worried space in Navy building yards used to construct destroyer escorts would then be unavailable for fleet destroyer construction. In July, the General Board and Chief of Naval Operations (CNO) recommended no destroyer escorts be built. The Navy, still at peace, preferred increasing its conventional destroyer numbers. The stalemate was broken by Britain. In June 1941, they asked for 100 escort destroyers. They requested a ship with the characteristics of the just-cancelled destroyer escort design. The submission was a Lend-Lease request. Britain would "borrow" the ships from the US Navy for the duration of the war, and then return them. It would only pay for ships retained by the Royal Navy. (Effectively, this would be ships sunk, which could not be returned.) Since the US Navy lacked ships of this type to lend Britain, it had to build them first. Roosevelt authorized construction of 50 destroyer escorts in US shipyards for Britain in August 1941.

Twin rudders were added late in the design of the destroyer escort. The change permitted greater maneuverability as the tight-turning circle achieved in this picture demonstrates. The photograph was taken during the acceptance trials of USS *Buckley*, the lead ship of its class. (USNHHC)

These new ships became Evarts-class destroyer escorts in the US Navy and one of two types of "Captain"-class frigates in the Royal Navy. (Initially these ships were named for Royal Navy captains who served under Horatio Nelson. Later names expanded to include other Napoleonic-era Royal Navy captains.) Contracts were signed in November 1941, and construction started in February 1942. These ships were all built in naval shipyards. The design was modified from the Navy's order. The ship was given an open-topped bridge, above the pilot house. The sonar shack (or Asdic hut) was below the bridge beside the pilot house. The torpedo tubes were removed. To avoid bottlenecks caused by the limited availability of reduction gearing, and to avoid competition for scarce steam turbines, the ships used a diesel-electric drive. Electric motors powered by diesel engines turned the propellers. Unfortunately, diesels also proved to be in short supply. Instead of using eight 1,500hp General Motors diesels, these ships carried four. This resulted in a drop in top speed to 21 knots.

The hedgehog changed antisubmarine warfare. The projectiles sank faster than depth charges, allowing less time for a submarine to maneuver to escape. Since they were fired ahead of the destroyer escort, sonar contact could be maintained until they were dropped. World War II destroyer escorts mounted the hedgehog launcher in a fixed box aft of the forward gun. (AP)

Destroyer escort development

Destroyer escorts were submarine killers. Their antisubmarine armament included two depth-charge racks aft and eight K-gun depth-charge launchers (four on British ships), plus a hedgehog fitted aft of the Number 1 gun. The hedgehog launched 24 100-pound projectiles, which exploded on impact with a submarine. Fired ahead of the ship, it allowed sonar contact to be maintained throughout the attack. The projectiles sank three times faster than depth charges, in a circular pattern. Fired accurately, at least two of the projectiles would hit the submarine, sinking it. It was a deadly weapon.

The Evarts mounted three 3in/50s. These could serve both anti-ship and anti-aircraft duties. While the 3in gun was light against all but the smallest surface warships, a hit from one could destroy a surfaced submarine. The light antiaircraft battery was also beefed up. Due to shortages in Bofors 40mm guns, the as-built design had a quad 1.1in (Chicago Piano) aft, instead of a twin 40mm, although the British substituted a twin 40mm for the 1.1in. Twin 40mms later replaced the 1.1s on US ships, as well. Nine single-mount 20mm were added. The Royal Navy also added 2-pdr pom-poms to ships operating in the North Sea and English Channel. These were intended for use against E-boats, and explosive motor boats.

The first four classes of destroyer escorts were armed with 3in/50 caliber main guns. Although on the light side, it could sink a surfaced submarine and provide antiaircraft protection. (AC)

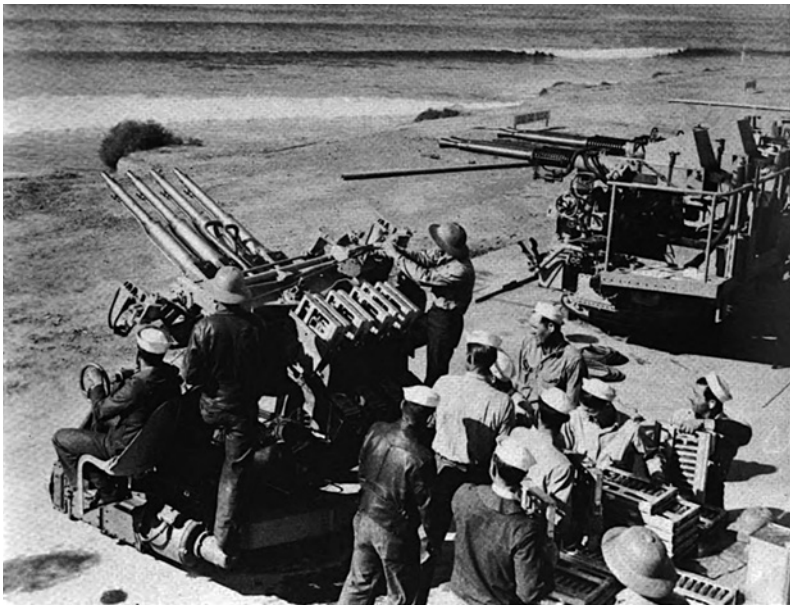
Destroyer escorts were not equipped with the sophisticated central fire control systems carried on destroyers. This reduced performance against fast moving surface ships or aircraft. They were incapable of accurately hitting surface targets while maneuvering at high speeds. This was not seen as a serious handicap as destroyer escorts were intended for use against submarines, while fleet destroyers were intended to fight surface warships. For improved antiaircraft performance, destroyer escort antiaircraft guns were equipped with Mark 14 lead-computing gunsights, while the 3in/50 main guns were fitted with the Mark 52 gunsight.

The Evarts-class set the standard for World War II destroyer escorts. All subsequent US-built destroyer escorts were developments of the Evarts. They were unique in being built without torpedo tubes. While initially done to conform to British desires, subsequent Evarts for US service left them off due to a combination of the short hull and a lack of available triple mounts.

While the Evarts were built for Britain, most ended up commissioned as US warships. Between the signing of the first construction contracts in November, 1941 and the first keel-laying for one of these ships in February 1942, the United States' belligerent status changed. On December 7, 1941, Imperial Japan attacked the United States at Pearl Harbor, and three days later Germany and Italy declared war on the United States. Suddenly the United States was at war and its need for escort ships acute. Over the next year, the choice was no longer between fleet destroyers and escort destroyers, the need was for any warship, and there was an acute shortage of escort warships.

In January 1941, the Navy ordered another 250 destroyer escorts. All 300 ordered ships were to be identical, and could go to either the US Navy or the Royal Navy. Another 420 destroyer escorts were ordered in September, 80 more soon after, and a final 205 ordered in May, 1943. In all, contracts were let to build 1,005 destroyer escorts.

Even ignoring potential improvements, the number of destroyer escorts to be built doomed the concept of identical ships. Despite the critical need for antisubmarine warships, insufficient numbers of the GM diesel engines



Due to a shortage of 40mm Bofors, most early destroyer escorts carried a quad 1.1in antiaircraft gun in the aft position. As the twin 40mm became available, they replaced the 1.1ins. Still later, a quad 40mm was installed in many destroyer escorts. This picture shows a quad 1.1in (foreground) and a quad 40mm at a training school for destroyer escort crews. (AP)

were available, even after the number of engines required was halved from eight to four. The solution was finding a substitute engine. General Electric had 6,750hp steam turbines available. Two of these could provide the 12,000hp originally intended for destroyer escorts, restoring the ship to a 24-knot top speed. But the Evarts', hull was too short to fit the engines. Lengthening the hull to 300ft at the waterline provided the extra room needed. The extra length allowed installation of a triple torpedo tube while retaining the extra midship antiaircraft guns carried by the Evarts. The result was the Buckley-class, the first "long-hull" destroyer escort class. Moreover, the longer hull reduced wave-making resistance as much as it increased resistance due to greater wetted surface. That meant the extra length and displacement gained by lengthening the hull came with no performance penalty. All subsequent destroyer-escort classes were long-hull designs.

Nor did the Buckleys use geared turbines. The turbines powered dynamos which powered the electric motors turning the ship's two propellers. As a result, these ships became known as turbine-electric, or TE destroyer escorts. The Evarts were classified as GMT (for General Motors Tandem diesels) vessels.

Two other destroyer escort classes were also added, the Cannon- and Edsall-classes. Both used the Buckley hull, with diesel engines instead of Buckley's turbines. They were also armed with the same suite of weapons as Buckleys, including the triple torpedo mount. However, since they had half the horsepower of the Buckleys, they had a top speed of just 21 knots.

The Cannons were outfitted with the same General Motors 16-278A diesels used by the Evarts. It made more sense to discontinue short-hull construction, while using the same engines in a more capable longer hull. These were termed Diesel Electric Tandem (DET) destroyer escorts.

The Edsalls substituted four 1,500hp Fairbanks-Morse geared diesels for the GM diesel-electrics of the Cannon class. Although the Cannon-class was developed first, the first Edsall-class ship was laid down in July 1942 while the namesake *Cannon* was laid down in November. Availability of diesels remained the major constraint for both classes. Landing craft and submarines used the same diesels as these ships, competing with destroyer escorts for them.

The US Navy preferred arming destroyer escorts with a main battery of 5in/38 rather than the 3in/50s of the first four destroyer escort classes. As with the absence of torpedoes on the Evarts and the 1.1in quads on early construction Evarts and Buckleys, the main gun decision was driven by availability. The 5in/38 was the Navy's standard heavy antiaircraft gun. Fleet

units – battleships, aircraft carriers, cruisers, and destroyers – had first call on the 5in/38. In 1942, there were not enough to go around, while the 3in/50 was available. By the middle of 1943, the shortage of 5in/38s had eased.

The result was the Rudderow-class. This was a Buckley with two 5in/38 in single enclosed turrets, replacing the three open-mount 3in/50s of the Buckley. Since the 5in shell weighed 55lb to the 3in shell's 13lb, the one-third reduction in guns doubled broadside weight, with a gun of a greater range and the same rate of fire. The Rudderows also had other changes, most notably a redesign of the bridge-area superstructure.

In addition to the hedgehog and twin depth-charge racks aft, US destroyer escorts carried four depth-charge launchers on each side. These "K-gun" launchers allowed a 14 depth-charge pattern to be dropped. (AP)

The high-open bridge of the first four classes lay in the design's Royal Navy heritage. It reproduced what the Royal Navy used on their antisubmarine and destroyer classes. US Navy practice for destroyers was an enclosed bridge on the same level as the pilothouse. This was one level lower than on the destroyer escort classes prior to Rudderow. This new layout was used on the Rudderow (and subsequent destroyer escort classes). The result was a lower, sleeker look for these ships. The Navy planned to replace the 3in/50s on the other long-hull ships, but this was abandoned after a handful of Buckley-class and one Edsall-class destroyer escorts were converted. Since the Rudderow was a repeat Buckley with a 5in gun and redesigned superstructure, this class was known as TEV (or Turbine-Electric "V" inch gun).

The final class was the John C. Butler. As with the Rudderow, Butlers carried a main battery of two 5in/38s in turrets. The Butlers were equipped with Westinghouse geared turbines (WGT) for propulsion, providing 12,000shp and a 24-knot top speed. Since this used geared turbines similar to fleet destroyers, the ships were essentially miniature destroyers, although they still lacked the destroyers' central fire control system. *John C. Butler* represented the pinnacle of World War II destroyer escort design. No further destroyer escorts were built until the Dealey class began construction in 1952.

Construction

The first 50 destroyer escorts were contracted to be built in Navy yards. These belonged to the US Navy. Twelve were to be built at Boston Navy Yard in Massachusetts, 24 at Mare Island Navy Yard in Vallejo, California, eight at Puget Sound Navy Yard, in Bremerton, Washington, and six at Philadelphia Navy Yard in Pennsylvania. This was a sound decision in November, when the contracts were let. The Navy yards were used for ship repair as well as ship construction. In November what repair work was required occurred as a result of US participation in the Neutrality Patrol in the Atlantic.

This changed dramatically in December, with the US entry into the war. Suddenly the West Coast yards were flooded with repair work. Lead times

The first 50 destroyer escorts ordered were built in US Navy yards. These were built and launched in conventional building slips, in competition with destroyer construction. This is the launch of USS *Duffy* (DE-27) at Mare Island Navy Yard in Vallejo, California. Mare Island built 34 Evarts-class destroyer escorts. (USNHHC)

forced the construction of the destroyer escorts at Mare Island. The slips were already committed, and keel laying for the first two destroyer escorts occurred in February 1942 at Mare Island, with two more there in March and six more in April, committing ten building slips to destroyer escorts. Philadelphia Navy Yard matched Mare Island in laying down two ships in February, and four more in April. Boston Navy Yard laid keels for two destroyer escorts in April, 1942, and churned out its 12 over the next year. But Puget Sound did not start its first until September. The west coast yards also took longer to build the ships they had started. Repairing battle-damaged ships had a higher priority than building destroyer escorts, and the limited number of yard workers slowed production of the Pacific coast ships. Puget Sound and Mare Island averaged 6 months from keel laying to launching for their contracted ships, while Philadelphia average four months and Boston three.

Then, in January, the Navy ordered another 250 destroyer escorts. One hundred were assigned to Navy yards (adding Charleston Navy Yard in South Carolina and Norfolk Navy Yard in Virginia to the mix.) This saturated the Navy yards, especially since Puget Sound was unavailable. The Navy opted to have the other 150 destroyer escorts built in civilian yards. To ensure destroyer escort production did not interfere with other work at private yards, the Navy contracted with private corporations to build entirely new shipyards. Bethlehem Steel which had eight existing yards (including Fore River in Quincy, Massachusetts) agreed to build a new yard at Hingham, Massachusetts. It started work on the yard immediately after Pearl Harbor, building 16 launch ways. It was in operation by May, and laid down the first two keels in June, 1942. It went on to build 48 of the 250 destroyer escorts contracted for in January 1942, all Buckley class.

Brown Shipyard in Houston, Texas was another greenfield operation. Built at the junction of Buffalo Bayou and Green's Bayou, construction on the facility began to build four submarine chasers requested by the Navy in 1940. Built and run by Brown and Root, Inc., a major Texas construction company in the 1940s, it was the outgrowth of the company's previous construction of the Corpus Christi Naval Air Station. The company's owners, George and Herman Brown, had no prior experience in shipbuilding. Regardless, the shipyard they built became one of the most efficient in the nation. The Navy assigned 18 of the 250 destroyer escorts contracted in January 1942 to Brown Shipbuilding. The first, the Edsall-class *Stewart*, was laid down in July 1942, followed by a second in July and two more in August. The

last of the 18 destroyer escorts was launched in May 1943 and commissioned in October.

The Navy convinced two other shipbuilders to build new shipyards for destroyer escorts near existing facilities. Federal Shipbuilding and Dry Dock Company had a large shipyard at Kearny, New Jersey committed to destroyer production. They opened a new facility at Port Newark, New Jersey to build destroyer escorts, landing a contract to build 35 Cannon-class destroyer escorts from the January 1942 procurement. Similarly, Consolidated Steel Corporation, with a small shipyard in Orange, TX, awarded a contract for 34 Edsall-class destroyer escorts, vastly expanded it in 1942. The Navy rounded out construction of its first 300 destroyer escorts by assigning 30 Cannon-class destroyer escorts to Dravo Corporation in Wilmington Delaware. This was an existing shipyard previously building commercial vessels.

To prevent competition with destroyer construction the Navy had three new shipyards built for destroyer escort construction. This included Brown Shipbuilding, located at the juncture of Buffalo and Greens Bayous in Houston, TX. The confined waters led to sideways launching, as can be seen at the launch of USS *Hurst* (DE-250) on April 14, 1943. Brown Shipbuilding eventually built 61 Edsall- and Butler-class destroyer escorts. After launching, a destroyer escort had to be finished, as at launching it was largely a bare hull. This fitting-out process took another four to six months under standard conditions. (USNHHC)

In all, of the 300 destroyer escorts ordered by the US Navy, all of the first 50 were built in Navy yards and 190 of the next 250 assigned to private yards. Britain only got six of the 50 destroyer escorts they ordered from the ships contracted in November, 1941.They got the other 44, plus an additional four from the ships built in for the 250 ordered in January.

The majority of the next 705 destroyer escorts were assigned to private yards. Only 66 were assigned to Navy yards. Contracts for another 362 were given to the private yards which previously built destroyer escorts –70 to Bethlehem-Higham, 78 to Federal, 159 to Consolidated Steel, and 55 to Brown Shipbuilding. The rest were assigned to additional private yards. These included Defoe Shipbuilding in Bay City, Michigan, Dravo in Pittsburgh, Pennsylvania, Tampa Shipbuilding in Tampa, Florida, Western Pipe & Steel Corporation in San Pedro California, and Bethlehem Steel shipyards in Quincy, Massachusetts and San Francisco, California. The destroyer escorts built in freshwater shipyards (Bay City and Pittsburg) offered special challenges. They had to reach the ocean via the St. Lawrence Seaway (frozen in the winter) or via river, using pontoons to reduce the draft.

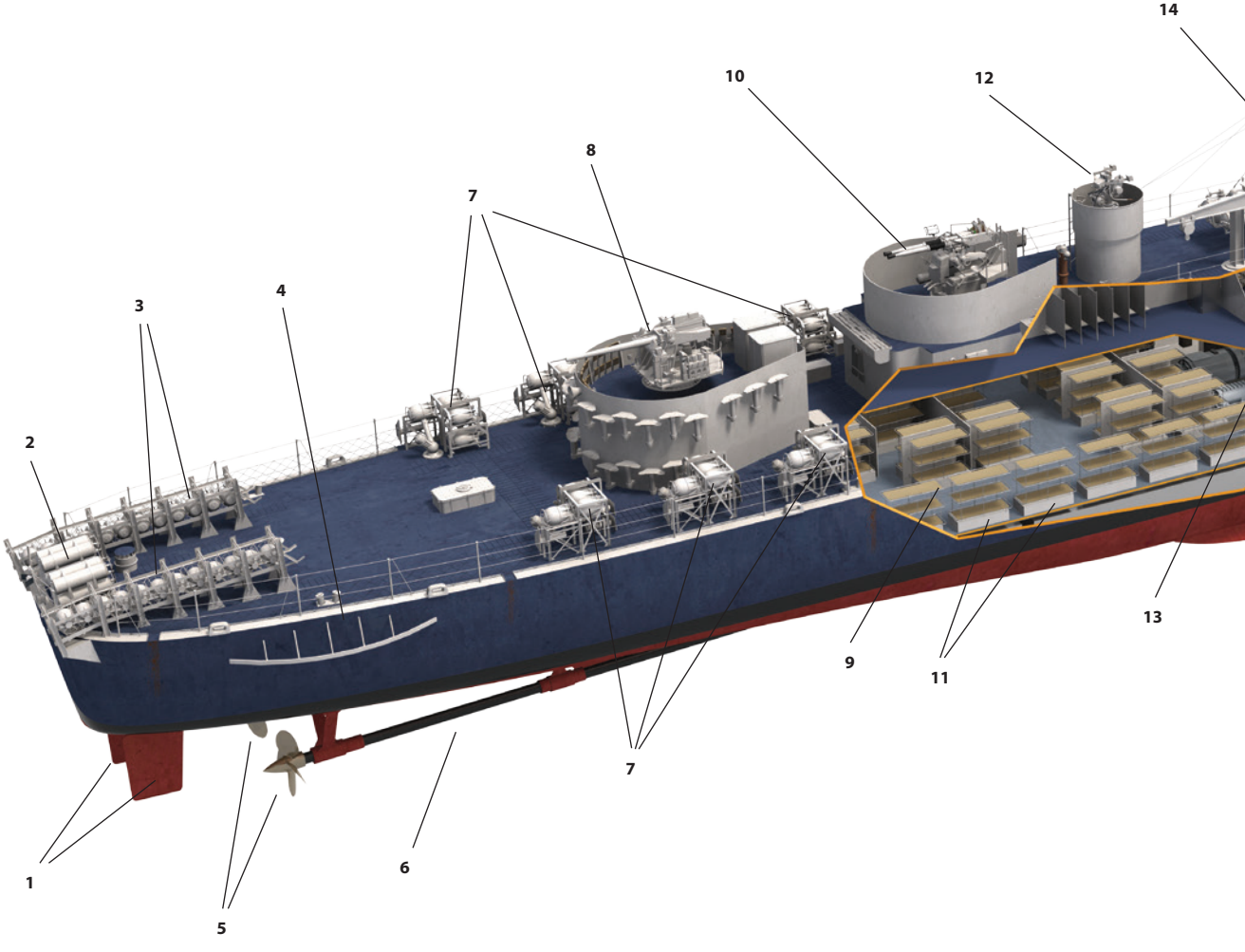
Not all of these ships were built. As late as March 1943 the Allies appeared to be losing the Atlantic U-boat war (leading to the final order of 250 destroyer escorts two months later). By May, the campaign finally and decisively favored the Allies. By fall, 1943, it was obvious a massive surplus of antisubmarine vessels was developing. In March 1942, building priority for destroyer escorts was second, after major warships. It plunged to eighth by October 1943.

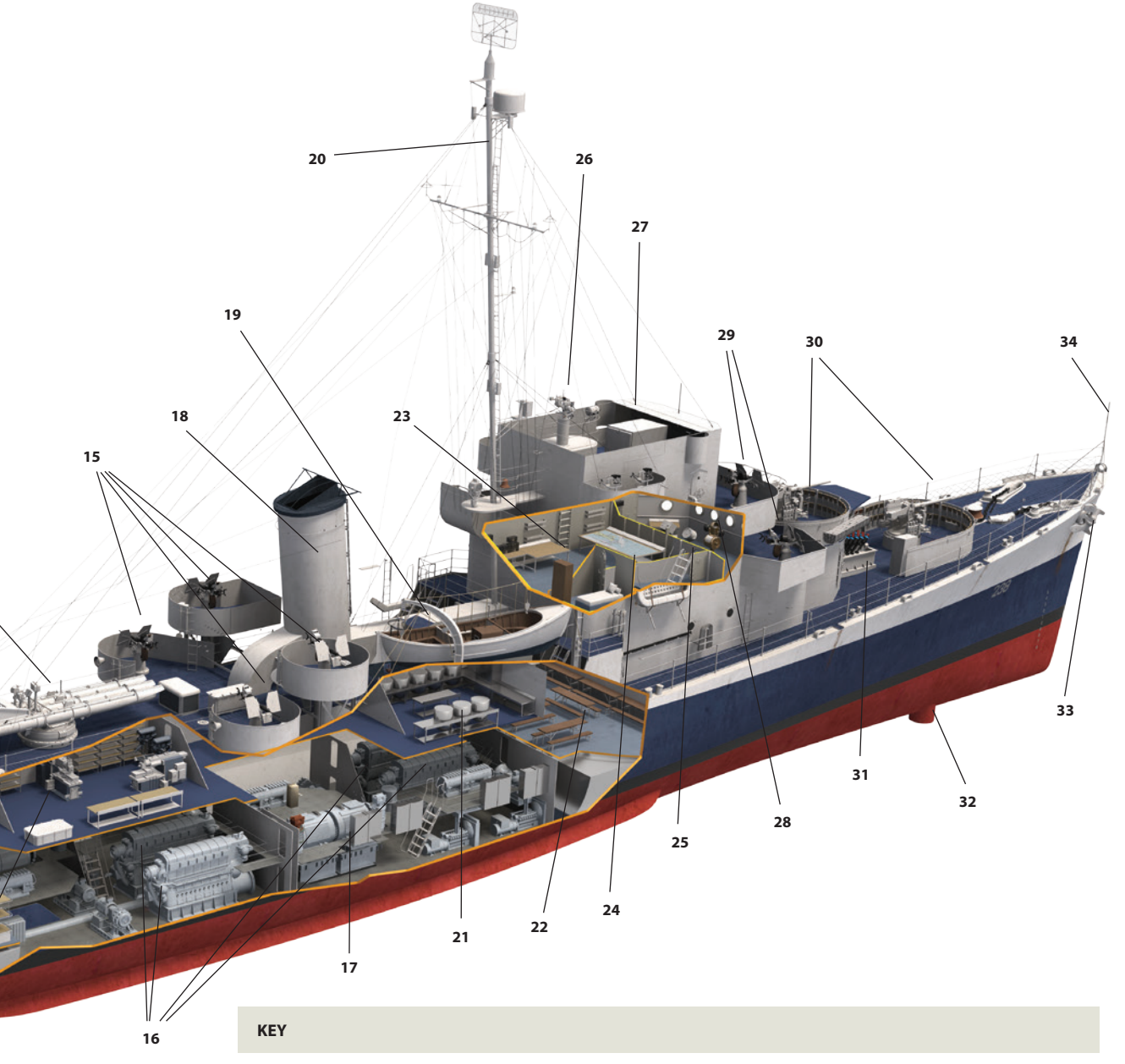
Destroyer escorts, with their low speed and weak gun armament, were useful only for their intended antisubmarine function. While some destroyer escorts could be converted to other purposes, their size and speed limited conversion options. Yards capable of building destroyer escorts could also build landing ships and critical shortages of landing ships and vessels was

A

USS STEWART (DE-238)

USS *Stewart* was the lead destroyer escort launched from Brown Shipbuilding Company in Houston, TX. An Edsall-class destroyer escort, it was powered by four Fairbanks-Morse 12-cylinder diesel engines. It is one of six surviving World War II-era destroyer escorts as of 2020, and one of two preserved as museum ships in the United States. (The other, USS *Slater*, is afloat in Albany, NY.) It is the oldest surviving destroyer escort, and the only existing destroyer escort to spend its entire operational career in the US Navy. It was the third US Navy warship named for Commodore Charles Stewart, captain of USS *Constitution* when it captured HMS *Cyane* and *Levant*. (The second, a Clemson-class destroyer, was salvaged by Japan after scuttling, and is the only US warship to have served in the Imperial Japanese Navy.) Launched on November 22, 1942, it was commissioned on May 31, 1943. Initially *Stewart* served as a school ship in Miami training antisubmarine personnel. In October 1943, *Stewart* went to Washington Navy Yard, where it escorted Franklin Roosevelt on the Presidential yacht to Chesapeake Bay, where the President boarded USS *Iowa* before departing to the Tehran Conference. In 1944, *Stewart* was assigned to Atlantic convoy duty, completing 30 transatlantic crossings. After Germany's surrender, *Stewart* was reassigned to the Pacific, but was conducting training exercises in Pearl Harbor when Japan surrendered. It was placed in reserve in January 1947, remaining in reserve until 1969, when it was found unfit for further naval service. It was struck from the Navy list on October 1, 1972. Instead of being scrapped, on June 25, 1974, *Stewart* and Gato-class submarine *Cavalla* were permanently loaned to the City of Galveston as museums ships at what is now Seawolf Park. Despite ups and downs, *Stewart* is still at the park after 46 years, and undergoing restoration. The plate depicts *Stewart* as it appeared in late 1943.





KEY

1. Rudders (there are two)
2. Smoke generators
3. Depth charge racks
4. Propeller guards
5. Propeller
6. Propeller shaft
7. K-guns
8. 3″ gun
9. Crew quarters
10. Twin 40mm
11. Fuel tanks
12. Mk 51 gun director
13. Workshops
14. Triple torpedo tubes
15. Single 20mm
16. Engine room (two Fairbanks-Morse 12 cylinder engines in each)
17. Electric motors
18. Funnel
19. 26′ motor launch
20. Fore mast
21. Galley
22. Ward room
23. CIC room
24. Steering station
25. Life rafts
26. Director control house
27. Range rinder
28. Searchlight
29. Single 20 mm
30. 3″ gun
31. Hedgehog projector
32. Sonar head
33. Anchors
34. Jackstaff

developing. The result was cancellation of 496 destroyer escort contracts so shipyards could shift to landing vessels. The wave of cancellations began as destroyer escort construction finally reached full production. The first ten destroyer escorts were commissioned in the first quarter of 1943. After April 1943 at least ten destroyer escorts were commissioned each month. By then shipyards like Houston's Brown and Orange's Consolidated were delivering a destroyer escort every week. Twenty were commissioned in September, the month the first round of cancellations hit. Delivery peaked in November 1943, at 45.

The ships most vulnerable to cancellation were the ones least advanced in construction. In September, 1943, 205 Rudderow and Butler-class destroyer escorts, classes carrying 5in main batteries, were cancelled. More cancellations followed: 100 in October and another 100 in June 1944. September 1944 saw another round of cancellations. Fifteen ships were cancelled after construction began. They were launched to clear the building ways and left incomplete or scrapped on the building ways. The final two cancellations occurred on January 7, 1945.

Ironically, it was the best destroyer escort designs that suffered the highest percentage of cancellation. Only 37 percent of the Cannon-class ships and 7.5 percent of the Evarts-class were cancelled. All the ordered Buckleys and Edsalls were completed. Of the most-capable Rudderow and Butler-classes, half and three-quarters respectively, were cancelled.

OPERATIONAL HISTORY

The first destroyer escorts entered service in January 1943, when the Battle of the Atlantic was at its height. Five entered service in the first quarter of 1943, although the numbers grew quickly, almost exponentially through the rest of the year. Deliveries peaked in 1944. Fewer destroyer escorts were commissioned in 1945 because new orders had largely been cancelled the year before. Over 500 destroyer escorts saw service in World War II, 475 as commissioned US warships, including 34 assigned to the United States Coast Guard. The remainder flew flags of the navies of the United Kingdom, Free France, and Brazil. They saw combat in the Atlantic, Pacific, and Mediterranean. Twenty-eight were sunk or so badly damaged as to not merit repair.

While most were retired after World War II ended, scores soldiered on. Under the United States flag, dozens saw service in the Korean, Vietnam, and Cold Wars, often in roles far different from that originally envisioned for destroyer escorts. Others were used by the Navy Reserve as training ships, and the US Navy sold or lent 79 other destroyer escorts to 18 different allied foreign navies post-war. Some were still in service as the 21st century began.

World War II: The Atlantic and European Theater

While the first destroyer escorts were laid down in February, 1942, nearly a year passed before the first one was commissioned on January 20, 1943. It arrived at its duty station on March 4, the first destroyer escort to enter service. It spent the war as a training ship for the Sub Chaser Training Center. Although a non-combat position, it was a critical role.

Only five other destroyer escorts entered service before April 1, but ten more were commissioned in April, and another 33 in May and June. Seagoing training was vital for the crews manning these ships.

The destroyer escorts were critically needed in the Atlantic during the winter and early spring of 1943. The Allies seemed on the verge of losing the Battle of the Atlantic. U-boats sank 44 merchant ships in January, 1943, 67 in February, and 110 in March. In exchange for over 200 Allied ships, only 39 U-boats had been sunk.

By April 1943, the US Navy had assigned only six destroyer escorts to convoy duties in the North Atlantic. Twenty more arrived by the end of June, yet by then the tide had turned. Forty-two U-boats were sunk in May 1943 with a loss of only 45 merchant ships. The U-boat losses were so severe that Admiral Karl Dönitz temporarily withdrew the U-boats from attacks against North Atlantic convoys at the end of May. Yet the destroyer escorts' service in the Atlantic over the next two years was important. They were quickly integrated into convoy escort groups. By the time Germany surrendered in May 1945, around 175 US Navy destroyer escorts were operating in European waters.

USS *Brennan* (DE-13) was the first destroyer escort to enter active service in the US Navy. Assigned to the Sub Chaser Training Center in Miami, Florida, it served as a school ship throughout the war. Here it is tied up to a dock at the training center. (AC)

Initially, their main function was to strengthen the escort groups guarding convoys. Convoy duty was often dull, occasionally dangerous and absolutely critical. Since Britain and Canada assumed responsibility for the North Atlantic convoys sailing to Britain, US Navy destroyer escorts protected convoys routed across the southern parts of the North Atlantic Ocean, especially convoys with destinations in the Mediterranean. US destroyer escorts manned by the US Coast Guard screened convoys on the northern runs, convoys containing tankers and troopships from Curacao or New York to Liverpool. The one destroyer escort sunk while on convoy duty, Edsall-class USS *Leopold* with a Coast Guard crew, was torpedoed protecting Convoy U-16.

US destroyer escorts also protected Mediterranean convoys, and supported invasion forces in both the Mediterranean and English Channel. Both U-boats stationed in the Mediterranean and German aircraft, particularly those armed with torpedoes or radio-guided glider bombs posed risks. (Italy surrendered soon after the first destroyer escorts entered the Mediterranean.) In addition to antisubmarine weapons and antiaircraft guns, some destroyer escorts

The US Navy began the war limiting African-Americans to serving as cooks and mess stewards. In 1944 the Navy expanded this range of jobs by manning the Evarts-class USS *Mason* (DE-529) with a largely African-American crew. Entering service in March 1944, *Mason* performed well. This shows her crew at the commissioning ceremony. (USNHHC)

assigned to the Mediterranean were equipped with electronics to jam glider bombs. Jamming frequently proved successful.

Two destroyer escorts were sunk or damaged beyond repair in the Mediterranean. The Buckley-class *Fechteler* (DE-137) was torpedoed and sunk escorting a convoy off Oran in May 1944. Edsall-class *Holder* (DE-401) was torpedoed by German aircraft near French North Africa, and damaged beyond repair. Buckley-class USS *Rich* (DE 695), struck a mine and sank off Utah beach during the D-Day operations in Normandy. *Holder* prevented a second Edsall-class destroyer escort from being scrapped, however. Coast-guard-manned *Menges* (DE-320) was torpedoed off Algiers in April 1944, escorting a Mediterranean convoy. Its stern was destroyed, but *Menges* was patched up, and towed to New York. There, *Menges*'s damaged stern was cut off and *Holder*'s intact stern was welded on to replace it. *Menges* returned to service in October 1944.

The most important service provided by destroyer escorts in the Atlantic was as members of antisubmarine hunter-killer task groups, consisting of one escort carrier accompanied by up to six destroyers or destroyer escorts. These began appearing in late 1943, with the screen made up of destroyers, especially World War I-era flush-deckers. By 1944 these were being replaced by the flood of destroyer escorts entering service. The first escort carrier/destroyer escort hunter-killer team set sail in February 1944. They were used

B

BOARDERS AWAY – USS *BUCKLEY* VS U-66

In the pre-dawn hours of May 6, 1944, the destroyer escort *Buckley*, lead ship of its class did something no US Navy warship had done since the War of 1812 – repel boarders. *Buckley* was part of a submarine hunter-killer group in the Atlantic built around the escort carrier *Block Island* in May 1944. Aircraft from the carrier reported a surfaced submarine near *Buckley*. It was U-66, a Type IXC U-boat on its tenth war patrol. *Buckley* was ordered to intercept. *Buckley* surprised U-66, firing at point-blank range. The damage U-66 received prevented it from submerging. U-66 turned away from *Buckley*, attempting to torpedo its attacker with its stern tubes. This also allowed U-66's crew to man its forward deck gun. *Buckley* twisted away from U-66's stern, and the two vessels began exchanging fire. At 0328hrs, *Buckley* turned and rammed U-66. U-66's skipper, Oberleutnant Gerhard Seehausen, sent over a boarding party. A dozen Germans swarmed aboard *Buckley*'s forecastle. A brawl ensued. Neither side expected hand to hand combat. At this point neither side had firearms. Instead it was fists and improvised weapons. *Buckley*'s men grabbed whatever was at hand. One man swung a hammer. Others grabbed heavy ceramic Navy-issue coffee mugs. Others snatched up expended shell casings. By the time U-66 broke off, the Americans had the upper hand. Between five and ten Germans were captured after the short fight ended. A firefight ensued. *Buckley*'s captain, Lieutenant Commander Brent Able, broke out arms. U-66 had its upper works sprayed by fire from tommy guns and tossed grenades. At 0338hrs, Seehausen ordered scuttling charges set, and the U-66 abandoned. It sank at 0341hrs. *Buckley* plucked the survivors from the ocean, collecting 36 prisoners that night. Twenty-four others, including Seehausen, died. This plate shows the initial battle, the brawl on *Buckley's* forecastle.

One of the most audacious destroyer escort actions involved participating in the capture of U-505. This photo shows U-505 tied up besides its captor, USS *Pillsbury*, the day after it was taken. (USNHHC)

both to accompany convoys (usually operating independently of the convoy's escorts) or in open ocean on routes likely to be used by U-boats for refueling or transit to the Indian Ocean.

Pairing destroyer escorts with escort carriers proved ideal. Destroyer escorts were designed to hunt U-boats and the escort carriers assigned to this duty could only go 18 knots (three to six knots slower than the destroyer escorts' 21 to 24 knot top speed). The carrier's aircraft served as scouts finding U-boats and driving them towards the destroyer escorts. The destroyer escorts would finish off the U-boats flushed by the aircraft. The destroyer escorts had no convoy to defend, and concentrated on sinking U-boats rather than suppressing them. These operations led to the most dramatic battles between destroyer escorts and U-boats fought during World War II. U-boats not sunk by a destroyer escort's depth charge or hedgehog attacks would surface to battle it out. The battle between U-66 and USS *Buckley*, during which the U-boat's crew boarded *Buckley*, occurred during a sweep by the task group centered on USS *Block Island*. Other U-boats, like U-515, flushed by a carrier group built around USS *Guadalcanal*, surfaced to give the crew the opportunity to abandon ship.

This led to the most audacious destroyer escort exploit in the Atlantic, the capture of U-505. The task group's commander had his destroyer escorts organize boarding parties to take an abandoned U-boat before it could be scuttled. The plan was successfully executed on June 4, 1944. The capture created a quandary for the Navy's horrified high command. The Allies had cracked the codes used to communicate with U-boats. It feared if word of the capture reached Germany the codes would be changed. The U-boat was taken to Bermuda, and the group's personnel sworn to secrecy until the war's end. Orders were also issued to not capture any U-boats.

Hunting U-boats was a dangerous game. One escort carrier and two destroyer escorts, *Fiske* (DE-143) and *Frederick C. Davis* (DE-136), were sunk by their quarry while hunting U-boats, *Davis* on April 24, 1945, just two weeks before Germany's May 7 surrender. It was part of an effort involving four escort carriers and 50-plus destroyer escorts to hunt down the remnants of the U-boats in the Western Atlantic.

During operations in the Atlantic and European waters, destroyer escorts were credited with sinking 28 U-boats. The majority of these kills were made by destroyer escorts in hunter-killer teams. In exchange, six destroyer escorts were lost due to all causes.

World War II: The Pacific War

The destroyer escort's war in the Pacific began as early as its war in the Atlantic and lasted four months longer. It was also deadlier, largely due to the kamikaze threat after October 1944. While the first destroyer escort was assigned to service in the Atlantic, the next two were sent to the Pacific. In all 21 destroyer escorts were assigned to the Pacific by July 1, 1943. Ultimately, most destroyer escorts would serve in the Pacific, and virtually all headed there after the German surrender in May, 1945.

The destroyer escort was designed to be used in the smaller, colder, and stormier North Atlantic, not the Pacific. It was also intended to protect slow merchant convoys from attacking submarines. Yet Japanese underwater doctrine neglected commerce warfare. Merchant shipping and ships in the fleet train and logistical tail required to support combat operations were secondary targets for the Imperial Japanese Navy, even its submarine force. Give a choice between torpedoing a World War I era light cruiser or a fully-laden 10,000 deadweight ton tanker most Japanese submarine commanders would opt for the cruiser. It was a warship. Destroyer escorts were fighting a different war in the Pacific. They still had antisubmarine duties, and there were dedicated teams of destroyer escorts working in antisubmarine hunter-killer teams, alone with just destroyer escorts or accompanying an escort carrier. There were comparatively fewer Japanese submarines than German U-boats. By the time destroyer escorts arrived in the Pacific, US Navy intelligence was reading Japanese signals, and could track and direct antisubmarine forces to targets using signal intelligence. The most spectacular success in this arena occurred in May 1944, when two antisubmarine units, one made up of three destroyer escorts and the other four destroyer escorts and an escort carrier combined to hunt down nine Japanese submarines. One well-trained Buckley-class destroyer escort, USS *England* (DE-635), sank six of the nine submarines in 12 days. Destroyer escorts were credited with sinking 30 Japanese submarines between their arrival in the Pacific and the end of the war.

Japanese submarines were dangerous foes, however. Three destroyer escorts were sunk by Japanese submarines. Butler-class USS *Shelton* (DE-407) and USS *Eversole* (DE-404) were torpedoed and sunk in October 1944, *Shelton* off Morotai on October 3 and *Eversole* off Leyte 25 days later. A "Kaiten" manned torpedo struck and sank Buckley-class USS *Underhill* (DE-682) off Luzon on July 24, 1945. Loss of life was heavy in all three cases.

Destroyer escorts operated far more with the fleet in the Pacific than as merchant convoy escorts or in submarine-hunting units. The cargoes carried across the Pacific were almost exclusively related to combat operations, rather than food and supplies for civilians. Australia and New Zealand were largely self-sufficient, except for petroleum, the civilian populations of Australia and Pacific islands being comparatively small.

Fleets operated on a much larger scale in the Pacific than the Atlantic. A dozen or more fast carriers or battleships regularly operated together, along with the requisite screening units. Amphibious invasions required hundreds of troop transports, landing craft, cargo ships, and support craft. As many as two dozen escort carriers might support an invasion. The screening

Destroyer escorts were basic ships intended to be crewed by raw recruits. Here a line of sailors pass 3in shells as they restock the magazine. (AC)

requirements were likewise increased. The numbers of destroyer escorts committed to these operations was large. Between 40 and 55 destroyer escorts supported the Philippine, Iwo Jima and Okinawa invasions, screening escort carriers, invasion ships, and the fleet train.

Due to their low top speed, destroyer escorts could not support fast carrier or battleship operations, or even cruiser task forces. They were limited to protection of fleet auxiliaries, including escort carriers, and invasion ships. Often, the escort carrier task groups providing ground support aircraft for invasion troops were protected by screens exclusively made up of destroyers and destroyer escorts. Destroyer escorts were also used for other duties associated with supporting amphibious assaults, including providing close

C

CAPTURE OF U-505

In spring 1944, Captain Daniel Gallery, commanded Task Group 22.3, a hunter-killer team made up of the escort carrier *Guadalcanal* and destroyer escorts *Pillsbury* (DE-133), *Pope* (DE-134), *Flaherty* (DE-135), *Chatelain* (DE-149), and *Jenks* (DE-665). In April the Group sank U-515. Gallery noticed U-515's crew abandoned quickly after being forced to the surface. He wondered if it might not be possible to capture a U-boat if the crew could be panicked into abandoning too quickly to properly scuttle the submarine. Everyone fell in with the idea, and the destroyer escorts organized boarding parties, and practiced capturing a U-boat. On June 4, *Chatelain* reported sonar contact with a U-boat. The task group's ships and aircraft swung into action. After *Chatelain* dropped hedgehog mortars and depth charges on the contact (which responded by firing an acoustic torpedo that missed *Chatelain*), a second attack damaged the U-boat, which surfaced. The submarine proved to be U-505, a Type IXC boat on its way home from its tenth combat patrol. *Chatelain*, *Pillsbury*, and *Jenks* were within sight of the submarine and opened up with their 20mm and 40mm guns. They were assisted by F4F Wildcat fighters from *Guadalcanal* which sprayed U-505 with .50cal machine gun fire. The fire, as intended, failed to create hull damage, but encouraged U-505's crew to abandon hastily. Once the attackers saw this, the destroyer escorts ceased fire and *Pillsbury* lowered a boat with a boarding party to take possession of U-505.As hoped, the U-boat was abandoned by the time the boarding party reached it. Lt. jg Albert David and two enlisted sailors plunged into the conning tower. They found no one below, discovered the scuttling charges were not set, but that a bilge drain was uncapped and all vents were open. Closing the drain and shutting the vents, they checked the inrushing water before it sank U-505. U-505 was drained, and towed to Bermuda, a prize of war. David would later be awarded a Medal of Honor. After the war U-505 was preserved at Chicago's Museum of Science and Technology, where it remains today. The plate depicts the point where *Pillsbury*'s boarding party is approaching U-505.

in fire support or guiding landing ships to the appropriate landing beach. A number of destroyer escorts were also converted to fast attack transports (ADPs), as discussed in the 'Variants' section, to deliver troops to the battlefield.

What destroyer escorts were not expected to do was fight other surface warships. Yet the four destroyer escorts of Taffy 3 demonstrated in October 1944, they would do so, when necessary. As described in the introduction, these ships, *Dennis*, *Raymond*, *John C. Butler*, and *Samuel B. Roberts*, all Butler-class, along with destroyers *Hoel*, *Heerman*, and *Johnston*, challenged the battleships and cruisers of Japan's Central Force off Samar. As in the Mediterranean, and on a much larger scale, aircraft were the main threat in the Pacific. To improve destroyer escorts air defense abilities, the antiaircraft batteries were increased. Plans were made (but later largely dropped) to replace the 3in main battery with 5in guns. More commonly, the stern twin 40mm was replaced with a quad 40mm, twin 20mm guns replaced the single 20mms, and torpedo tubes removed and replaced with up to four twin 40mm mounts or two twin 40mm and up to four additional 20mm mounts. These might be single 20mm guns or twin 20mm guns depending on availability.

Despite these upgrades, destroyer escorts were not nearly as good at providing air defense as fleet destroyers. They had fewer guns and they lacked the sophisticated fire control systems of their larger brothers. The problem grew worse once Japan introduced kamikazes. These were aircraft armed with a bomb, whose pilots deliberately crashed into an enemy warship. The pilots were generally unskilled trainees. The aircraft used were generally older, lightly armored aircraft approaching obsolescence. A fatal and one-way trip for the pilot, it was equally fatal to many on ships struck by kamikazes. If hit, kamikaze aircraft often burst into flames or exploded, but they had to be hit, and the destroyer escort's light antiaircraft battery made this more challenging. This did not mean destroyer escorts were ineffective. When *John C. Butler* was attacked by 10 kamikazes while on lone radar picket duty, it shot down five, chased off one, with the others leaving after US fighter protection appeared. Kamikazes first appeared in October 1944 during operations around the Philippines. They increased as the war continued reaching a peak during the 45-day Okinawa campaign. This tested destroyer escorts as they were never previously tested.

To provide early warning of incoming Japanese kamikaze raids, the Navy posted individual warships as pickets between the air approaches from

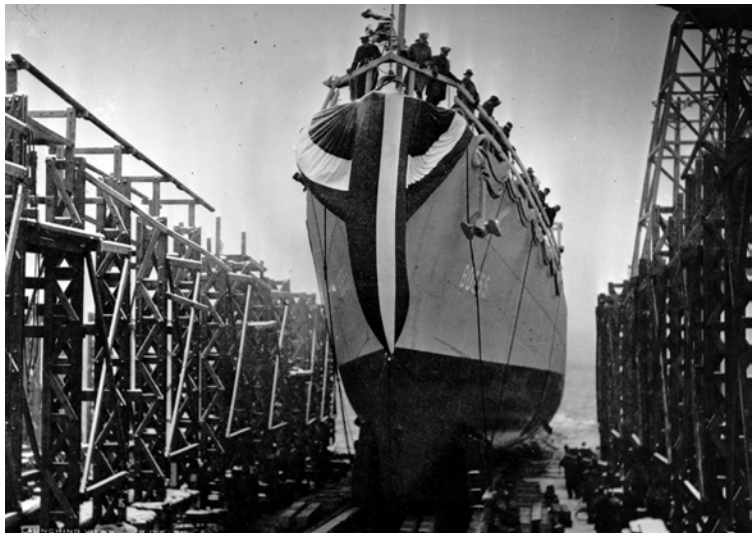
USS *Ulvert M. Moore* (DE-442), a Butler-class ship, was one of many destroyer escorts that served in the Pacific manned by reservists and recruits. Although it was typical, its captain was not. He was the President's son, Lt Commander Franklin D. Roosevelt, Jr., a peacetime member of the Navy Reserve. (USNHHC)

Samuel B. Roberts (DE-413), a Butler-class vessel built in Houston, has been described as the destroyer escort that fought like a battleship. During the Battle off Samar, *Roberts* torpedoed and damaged the Japanese heavy cruiser *Chokai*. This picture shows *Roberts* in the Pacific in early October 1944, shortly before it was sunk off Samar. (USNHHC)

Japan (where the kamikazes departed) and the Allied naval forces around Okinawa. Destroyers and destroyer escorts were frequently used for this duty. When not on picket duty, destroyer escorts covered the fleet's outer area screen. Kamikazes often attacked the first ship they saw – frequently destroyer escorts on radar picket or outer screen duties – rather than waiting until they reached the fleet. In the hard calculus of war, Allied commanders viewed this as a reasonable trade. Destroyers, and especially destroyer escorts, were among the least valuable ships for kamikazes to attack. Due to their small size and maneuverability they were among the hardest to hit. Over 25 destroyer escorts, almost half of the destroyer escorts at Okinawa, were struck by kamikazes during the Okinawa campaign.

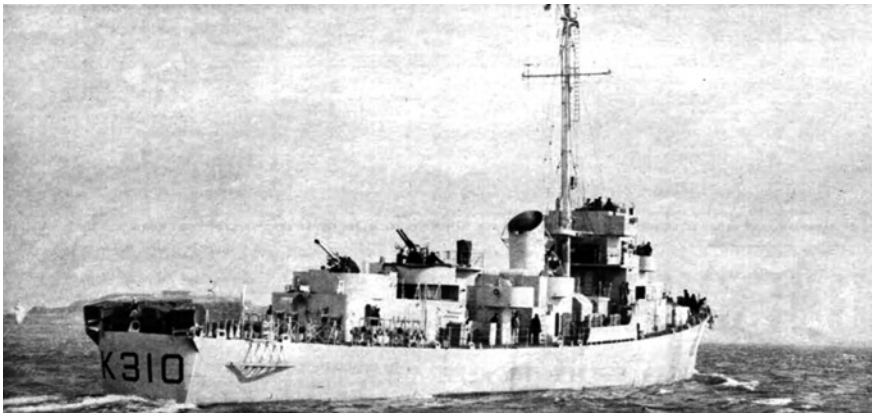
Additionally, a number of destroyer escort APD conversions were also hit. Remarkably none were sunk. Kamikazes rarely damaged the watertight integrity of a destroyer escort's hull the way a torpedo did. Regardless, the casualties inflicted were severe. While the navy sent the ships so damaged home for repair (and frequently conversion to fast attack transports and radar pickets) most repair work ceased when the war ended, and these ships saw no further service.

Only five of the 50 destroyer escorts ordered by Great Britain in November 1941 actually served in the Royal Navy. The rest were appropriated by the US Navy. The order was fulfilled by later construction. One of these was HMS *Bayard*, shown as it is launched at the Bethlehem Shipyard, Hingham, Massachusetts, in March 1943. (USNHHC)



World War II: Foreign service

Although five out of every six completed destroyer escorts were commissioned as US Navy warships, the ship was originally designed for service in the Royal Navy, and the first 50 ordered were supposed to go to Great Britain. Although only six ships from that order served in the Royal Navy, Britain eventually received 78 destroyer escorts, which they classified as frigates. Additionally, the US Navy transferred 12 destroyer escorts to the Free French Navy and Brazil during World War II. As



HMS *Bayntun* was the first Captain-class frigate to enter service in the Royal Navy. It spent most of its active career in the Atlantic, with a home port of Derry, Northern Ireland. Note the twin 40mm where a US Evarts-class ship would have carried a quad 1.1in. (AC)

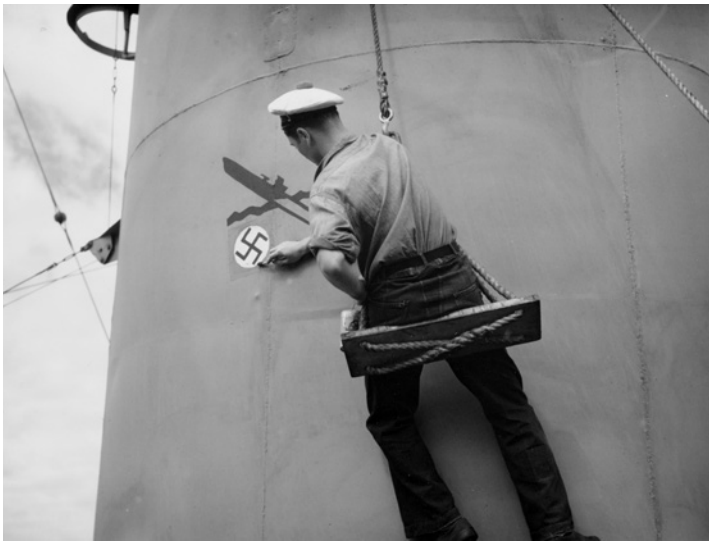
with the United States, Britain commissioned its first Captain's class frigate, HMS *Bayntun*, in January 1943. This was an Evarts-class design. Three others, also Evarts, joined it in the first quarter of 1943. Four more, split evenly between Evarts and Buckley designs, were commissioned by the end of June 1943.

The British modified these ships before they entered service. They carried no torpedo tubes and only four K-launchers. The 1.1in mounted on early US ships was omitted from British ships, with twin 40mm added during working up. The British frigates also carried more depth charges, 200 to the 160 on US ships. Fifteen frigates entered service in the third quarter of 1943, followed by 43 more in the last quarter of that year. A final 12 arrived between January and March 1944. In all, Britain received 32 Evarts-class and 46 Buckley-class ships through Lend-Lease. Following commissioning, British frigates went to Casco Bay, Maine where they "worked up" for operational service. Once operational, they were added to the escort screen of eastbound Atlantic convoys. On arrival they were assigned to a duty station. In 1943, this meant an assignment to a Western Approaches Escort Support Group. These were groups, typically six ships, assigned to protect convoys approaching or departing from Great Britain. These support groups were not assigned to individual convoys. They moved from convoy to convoy supplementing the assigned escort as the need arose. They remained at sea continuously for up to six weeks.

D

***SAMUEL B. ROBERTS* AT SAMAR**

Launched on December 6, 1943, and commissioned April 28, 1944, *Samuel B. Roberts* was one of 22 John C. Butler-class destroyer escorts built by Brown Shipbuilding in Houston, TX. It was part of the seven-ship screen protecting the six escort carriers of Task Unit "Taffy 3" on October 25, 1944. That morning the battleships and heavy cruisers of the Imperial Japanese Navy's Central Force, attempting to reach the Allied invasion fleet off the Philippine island of Leyte, encountered Taffy 3 in waters off Samar Island. Mistaking the slow escort carriers for Halsey's fast fleet carriers, the Japanese attacked the task unit. *Roberts*, along with the screen's three destroyers and the other three destroyer escorts immediately moved to protect their charges. After laying down smoke to hide the carriers, they attacked the Japanese warships. The only weapons aboard *Roberts* capable of inflicting serious damage to a battleship or cruiser were the three 21in torpedoes carried in its lone triple mount amidships. Now he was going to use it, Copeland set *Roberts* on a course intercepting the Japanese cruisers. Intent on getting close enough to the Japanese to launch torpedoes, he kept his 5in guns silent during the approach. He wanted to avoid attracting attention, and hold fire until the guns were close enough to hit with the *Roberts*'s primitive fire control system. Just before reaching the release point, a Japanese shell cut the mast, sending the radio antenna and its wiring over the torpedo mount. The torpedo officer was forced to re-compute the firing solution based on the bearing of the now-immobilized tubes. Then, at 4,000 yards, the torpedoes were launched at the heavy cruiser *Chokai*. One struck the cruiser's stern. *Roberts* was sunk later in the battle, but not before expending all of its 5in ammunition. Ultimately the screen attacks caused the Japanese to withdraw, the most improbable victory achieved by the US Navy. This plate shows *Roberts* firing the spread of torpedoes which would hit *Chokai.*



Sénégalais was one of six Cannon-class destroyer escorts lent to the Free French Navy. It saw active service in the Mediterranean, sharing credit for sinking U-371. A crewman on *Sénégalais* paints a kill marking on the smokestack. (USNHHC)

Once enough frigates arrived, they were placed in support groups made up solely of Captain-class ships. The ships were kept together operating as a team. By January 1944, there were six such groups. Between 48 and 55 frigates were assigned to the Western Approaches in 1944 and 1945.

Frigates also served extensively in the English Channel from June 1944 onward. Twenty-six supported the Normandy invasion, including three Evarts-types, which served as assault headquarters ships, coordinating landing ships. The others helped seal off the English Channel from U-boats or provided close escort for invasion convoys. Another 14 frigates were assigned to Coastal Forces in June 1944. These worked with Hunt-class destroyers and motor torpedo boats and motor gunboats to interdict German E-boats and other surface warships. Although they started in the Channel, by May 1945 they were operating off the German coast. These duties were hazardous. Britain lost 13 frigates to enemy action.

Three were sunk in the North Atlantic, and four in the English Channel (two during D-Day operations). An additional six were so badly damaged as to be constructive losses; two in the Western Approaches and four during coastal operations in the Channel or North Sea.

After the European war ended, Britain began refitting Captain-class ships for service in the Far East, against Japan. Japan surrendered before these ships could depart from Britain. The US Navy also transferred 12 destroyer escorts to France and Brazil during World War II, six to each nation's navy. These were all Cannon-class vessels.

The six French ships were assigned to the Free French Naval Forces during construction, and were named for native inhabitants of African colonies then possessed by France. They entered service between January and April 1944. During World War II they operated mainly in the Western Mediterranean, escorting convoys or supporting invasions. The *Sénégalais* attacked U-371, while escorting a Mediterranean convoy. While damaged by an acoustic torpedo launched by the U-boat, it shared credit for U-371's sinking.

Brazil entered the war as an Allied power in August 1942. Between August 1944 and March 1945, Brazil was given six Cannon-class destroyer escorts. These ships were commissioned US warships at the time of the transfer. These ships served in the Atlantic in the region between Brazil and Africa.

Afterwards

The destroyer escort's usefulness to the US Navy largely ended with World War II. They were designed for one purpose: to hunt and destroy diesel-electric submarines of the types being built in 1940. Yet that threat was gone, and would never return. Submarines remained a threat and would dominate naval warfare over the next 50 years but postwar submarines were

different from the submarines the destroyer escort had been designed to fight. Following Germany's surrender in 1945, the Allies found the final generations of German U-boats. The Type XXI Elektroboot and the Type XVIII Walter boat were capable of moving between 17 and 24 knots submerged. Seventeen knots was near the top speed of the diesel World War II destroyer escorts in rough seas. These boats could cruise underwater at high speeds for hours. The diesel-electric boat of 1940 would exhaust its batteries within an hour running at their top speeds. These German designs were being copied by the Allies, including the Soviets, who had gone from allies to adversaries in the last years of the 1940s. A submarine capable of outrunning a destroyer escort was difficult for that destroyer escort to attack. The US Navy possessed hundreds of fleet destroyers fast enough to catch the new generations of submarines.

Great Britain hastily returned the surviving Captain-class frigates in 1945–46. The Captain-class ships were on loan and had to be paid for if retained. The Royal Navy already had paid-for British-built ASW ships, even if they were less capable than the Captains. The United States, with no use for these returned vessels, scrapped most of them by 1947.

All US Navy destroyer escorts awaiting major repairs or significant conversion were sent to the breaker's yards or used as gunnery targets. By 1947 most of the rest were placed in reserve, "mothballed," emptied of stores, fuel lines, drained, sealed to the outside world, and placed in reserve fleet anchorages against a future need for their services. Only 37 destroyer escorts remained in commission in 1946, with four others assigned as Naval Reserve training ships.

All Evarts-class ships were discarded. Two were given to China (Nationalist China after 1948) immediately after World War II ended. The rest were gone by 1948. The long-hull classes lasted longer. The Navy had no need for large numbers of slow antisubmarine vessels, but the ships were too new to be simply broken up.

By 1952 the US Navy had largely abandoned the idea of using destroyer escorts as a mobilization reserve for a future World War II-scale conflict. They were too slow and too small, especially with the nuclear-powered submarines on the horizon. The navy had ten in active service in 1950, and then mobilized 54 more during the Korean War. The Coast Guard operated an additional 12 Edsall-class vessels between 1950 and 1954; six as weather ships and six for search and rescue. In the 1950s and early 1960s, up to 28 destroyer escorts, from all five long-hull classes were in use training reservists and by reservists to maintain sea time. Others were operated as radar pickets and fast attack transports through the 1960s. By 1973, the Navy disposed of the last of its World War II destroyer escorts. Only USS *Stewart* was preserved as a memorial ship.

Destroyer escorts continued in service after that. They were frequently donated to the navies of allied nations, starting in World War II when France and Brazil each operated six. France kept its six. Brazil received two more Cannon-class ships in 1945 and 1946 for a total of eight. Nationalist China received four Cannon-class vessels in 1948.

As the Cold War heated up, the US Navy transferred many of its mothballed destroyer escorts to allied nations through the Military Defense Assistance Program. In 1950–52, France got eight more destroyer escorts; the Netherlands six, Greece four, Italy three, Peru three, and Uruguay two. All were Cannon-class.

Almost immediately following World War II, the US Navy scrapped or mothballed most of its surviving destroyer escorts. Many remained in storage at reserve fleet bases, such as this one at Mare Island for 20 years or more. (USNHHC)

Transfers continued throughout the 1950s and 1960. Japan, Portugal, and Thailand received a total of five destroyer escorts between them in the late 1950s. In the 1960s, transfers accelerated, with over 30 sent. Chile, Ecuador, Mexico, Nationalist China, the Philippines, and South Korea received destroyer escorts during this period. In 1971, a final two destroyer escorts were transferred: two radar picket conversions to South Vietnam.

Most transfers during the 1940s and 1950s were Cannon-class ships (except for two Rudderows sent to Portugal in 1957), diesel-powered ships with 3in main batteries. Not until the 1960s did the US Navy transfer turbine-powered ships. Destroyer escorts experienced long, varied, and occasionally eccentric careers in their new navies. One of the two South Vietnamese ships became a prize of the Vietnam navy after reunification. (The other escaped to the Philippines in 1976.) Most were disposed of in the 1990s. USS *Slater*, today preserved as a museum in Albany, NY, was decommissioned by the Greek Navy in 1991.

A few survived into the 21st century. Mexico disposed of its last destroyer escort in 2015. Three, BNS *Bauru* (formerly *McAnn*, DE-179) in Brazil, ARC *Cordoba* (formerly *Ruchamkin*, DE-228/ADP-89) in Columbia, and BRP *Rajah Humabon* (*Atherton*, DE-169) in the Philippines, are preserved as museum ships in their respective countries.

One of the two destroyer escorts owned by Vietnam was in service as late as 1997 and is rumored to still exist. As of 2020, HTMS *Pin Klao*, (formerly *Hemminger*, DE-746) is still in use by the Royal Thai Navy as a training ship. It is the last destroyer escort on active duty.

Some destroyer escorts had second lives in the postwar navy. USS *Forster* was converted to a radar picket ship, and remained on active duty until 1971, when it was given to the South Vietnamese Navy and renamed *Tran Khan Du*. Captured by North Vietnamese in 1975, it was again renamed to *Dai Ky*. Surrounded by Vietnamese trawlers, it is conducting search operations in 1966. (USNHHC)

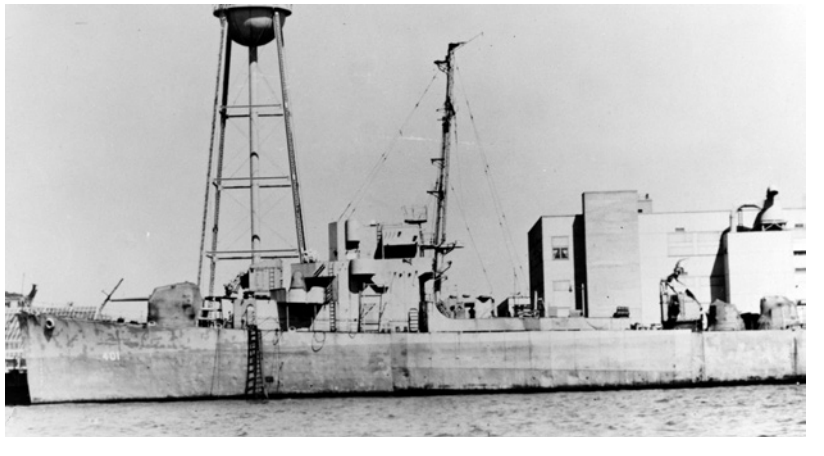
The last destroyer escort still in service is *Pin Klao*, as of 2020 a training ship in the Royal Thai Navy. A Cannon-class, it began its existence as USS *Henninger* (DE746). The photo shows it with its Thai "DE-1" number departing New York harbor for Thailand in August, 1959, a month after it transferred to Thai service. (USNHHC)

VARIANTS

Cancellation of 344 destroyer escorts with 5in guns left the Navy with surplus 5in/38 single-mount turrets intended for cancelled destroyer escorts. The navy had more turrets than hulls in which to install them. In October 1943 the Navy's chief of the Bureau of Ordinance proposed upgrading destroyer escorts carrying a main battery of 3in/50s with these 5in mounts, including the long-hull diesel-powered classes. Two 5in turrets would replace the three open-mount 3in guns. In essence this upgraded the Buckleys to Rudderows, as they were otherwise identical, except for different bridge configurations. Only a few destroyer escorts were actually converted. Eleven Buckley-class destroyer escorts were modified. The only diesel-powered destroyer escort upgraded was Edsall-class *Camp* (DE-251), which was modified during repairs for damage received in a collision. A second Edsall, *Holder* (DE-401), was technically converted or rather part of it was. After being torpedoed *Holder* was broken up for parts. The forward section became a moored training barge, with a 5in/38 turret replacing the 3in mounts. It was used to train destroyer escort crews. Even after half the contracted destroyer escorts were cancelled, it became increasingly clear more destroyer escorts were being built than could be used for antisubmarine and convoy duties.

After USS *Holder* (DE-401) was declared a constructive total loss, its forward section was used as a gunnery training hulk. The 3in/50s it originally had forward was replaced by a 5in/38 gun turret, making it the only Edsall-class destroyer escort to be modified to carry a 5in gun in World War II. This picture shows it in 1947, mothballed and awaiting scrapping. (USNHHC)

Yet the destroyer escort hulls were new, sturdy, with reasonable speeds and good endurance. One answer was to convert ships surplus to needs for antisubmarine duty to other purposes. The Navy needed minelayers and amphibious command ships. Destroyer escorts were the right size for both. With a top speed of 21 to 24 knots, they would have been perfect as fast minelayers. However, a load of mines, which had to be carried on the deck, raised the center of gravity (c-g)



Five Buckley-class destroyer escorts were converted to mobile power generators by replacing their torpedo tubes with cable reels. USS *Wiseman* (DE 667) was one of them. *Wiseman* is shown in Manila harbor in 1945, where it provided power and drinking water for the recently-recaptured Philippine capital. (NARA)

too high. The ships would be unstable. Stability issues also precluded their use as amphibious command ships. Instead destroyers under construction were converted to minelayers, while fast transports and a Coast Guard cutter were modified as command ships.

Another possibility was to reduce antisubmarine warfare gear, remove the torpedo tubes, and install three 5in turrets, a beefed-up anti-aircraft battery, and a destroyer fire control system. These destroyer escorts could provide inshore fire support during landing. Again, adding this extra equipment raised the c-g too high, creating stability problems. Destroyer escorts were also too small and the idea was dropped.

Other conversions proved successful. Britain converted several of their Captain-class frigates to fighter-direction ships. Seven turbine-powered destroyer escorts, including two British ships, were converted to mobile power generation stations. One, USS *Donnell* (DE-56), had been damaged and was unseaworthy. Reclassified IX-182, it was towed to Cherbourg, and its generators used to provide power to the port. This was so successful three other destroyer escorts, *Whitehurst* (DE-634), *Wiseman* (DE-667), and *Marsh* (DE-699), were converted to power generation ships during World War II, and a fourth, *Foss* (DE-59), in 1946. Cable reels replaced their torpedo tubes, with cables connected to their power plants. They could also distill water for drinking. *Wiseman* provided power and water for Manila after its recapture in 1945. *Marsh* provided power at Guam from October to December 1945 and in Korea from 1950 through 1952. *Foss* provided power to Portland, Maine after forest fires knocked out its electric grid. *Foss* was also used extensively in Korea.

The US Navy experimented with improving antisubmarine warfare capabilities of the surviving destroyer escorts in the early 1950s as part of an attempt to modernize the reserve fleet of destroyer escorts. This included adding more K-gun depth charge launchers, installing four antisubmarine torpedo tubes, and putting four hedgehog launchers on the superstructure aft of the bridge. Four destroyer escorts were converted, two *Butlers*, one *Buckley*, and one *Edsall*. These were prototypes, to test the concept. Only one, Butler-class USS *Tweedy*, went through the full conversion. The added capability did not justify the expense of a widespread conversion of existing destroyer escorts. It made more sense to develop new destroyer escorts instead. The most successful destroyer escort conversion was for use as fast transports (APDs) and radar pickets (DERs).

Fast attack transports

One category of ship the US Navy had an acute shortage of in 1943–44 were fast attack transports. The category emerged in 1940, when the old flush-

deck destroyer *Manley* was converted to carry 200 troops and four landing craft. These vessels could land company-sized units of Marine Raiders or Army Rangers to contested landing sites. Destroyer-based transports could swoop in at 20 knots, drop off troops, and provide fire support. Small and maneuverable, they were also ideal for supporting underwater demolition teams.

Manley proved so useful that the Navy converted another 35 World War I-era flush-deck destroyers to fast attack transports. Yet by 1943, the navy realized 36 of these ADPs (as they were designated) were too few. Worse, the flush-deck conversions were showing their age. Many would need replacement by the end of 1944, especially with expanded operations in the Pacific.

The long-hull destroyer escorts were almost as long as the flush-deck destroyers, had a greater beam and displacement, and were actually a bit faster than the flush-deck destroyers. The turbine-electric powered Buckley and Rudderow classes could reach 24 knots. The flush-deck APDs, with two boilers removed to accommodate troops, could only make 20 knots, and the Navy had ordered far more destroyer escorts than they needed. New construction would last longer than the battle-weary flush-deckers. In May 1944, the Chief of Naval Operations, Admiral Earnest King, ordered 50 Buckley-class TE destroyer escorts converted to high-speed transports. The design lengthened the deckhouse to provide living quarters for 162 soldiers or marines. All 3in guns, the hedgehog launcher, torpedo tubes, and K-gun launchers were removed. The two aft depth charge racks and the sonar equipment were retained, providing residual antisubmarine capability. The ships were re-armed with one 5in/38 mount forward, three twin 40mm Bofors, and six single-mount 20mm Oerlikons. Four LVCP landing craft were to be carried in davits immediately aft of the funnel. The fantail was cleared for cargo handling, and two five-ton cranes added. Troop capacity included 150 enlisted men and 12 officers. In addition to the four LCVPs, each ship carried six ¼-ton jeeps, two ¾-ton to 1-1/2-ton trucks, four pack howitzers, and four ammunition caissons or carts for the howitzers. These were carried aft, along with 7,500 gallons of fuel, stored in tanks between the depth-charge racks. The resulting conversions from Buckley-class ships became the Charles Lawrence-class fast attack transports from the first ship so outfitted. These were redesignated with APD hull numbers: APD-37 through 86.

Of the 50 conversions ordered in May 1944, 43 had been commissioned as destroyer escorts prior to conversion, while seven were still under construction. The completed ships were sent to New York Naval Yard or Philadelphia Naval Yard for conversion at a rate of five per month. Five of the Charles Lawrence conversions were cancelled. Those ships were instead converted to radar pickets. One additional conversion, that of USS *England* was cancelled when the war ended. *England*

USS *Tweedy* (DE-532) was one of four destroyer escorts converted in the 1950s to upgrade their antisubmarine capabilities. It is shown as it appeared in 1958. Note the four aimable hedgehog launchers on top of the superstructure aft of the bridge. (USNHHC)

The conversion of the 94 destroyer escorts which became fast attack transports occurred after the ships were launched. The conversion was done at an outfitting dock whether the ship was new construction or previously commissioned. *William J. Pattison* was launched as DE-594 but became APD-104 while outfitting. (USNHHC)

had been damaged by a kamikaze in 1945, and chosen for conversion due to the extensive repairs it needed. In all, the Navy commissioned 44 Charles Lawrence-class APDs.

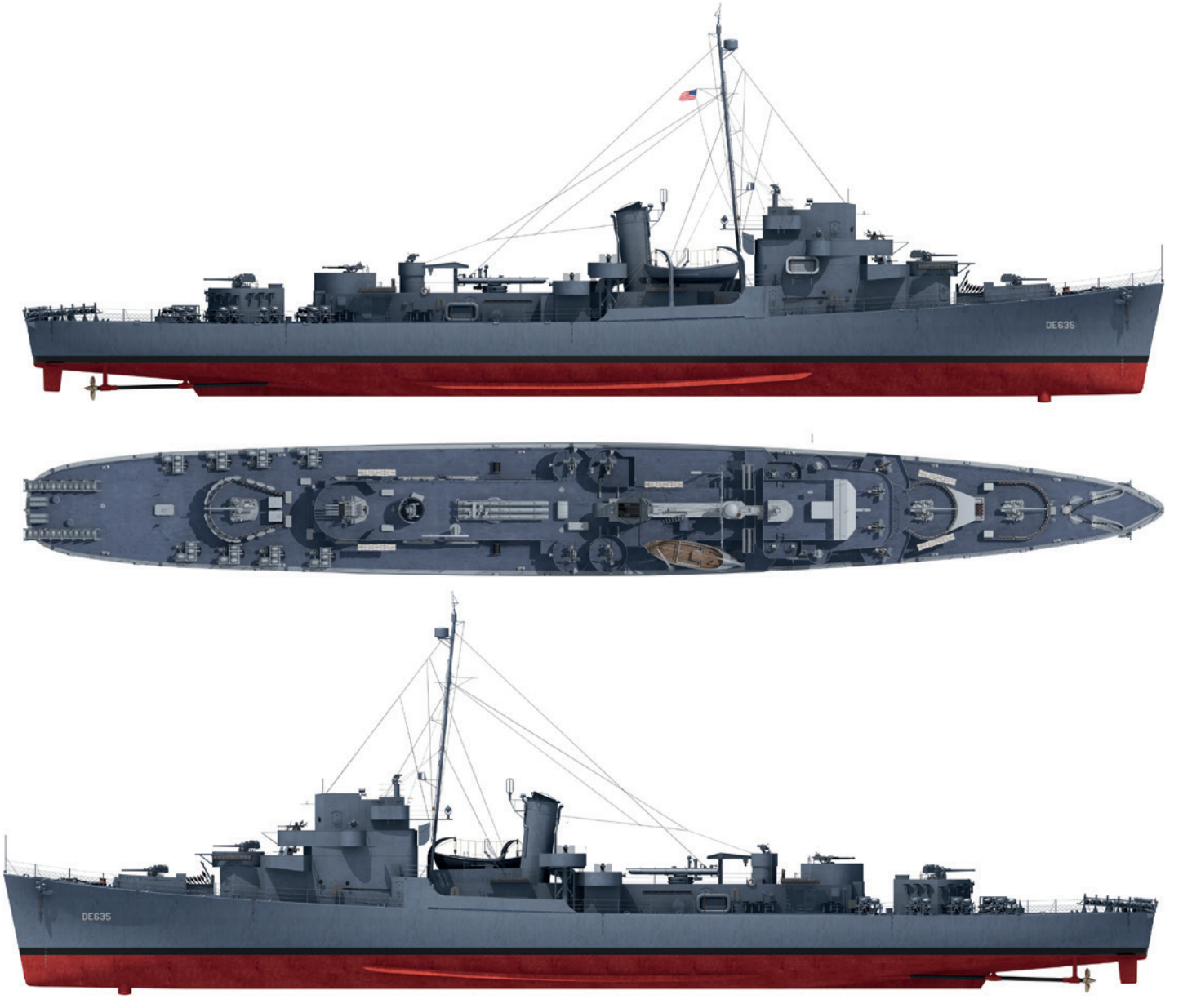
At the same time the Navy was converting Buckleys, it developed plans for Rudderow and Butler APD conversions. These were similar to the Buckley conversions, although the Rudderows and Butlers came with a battery of 5in turrets, so those plans called for the removal of the aft mount. While the modifications aft of the forward superstructure were identical, the Rudderows and Butlers retained the enclosed bridge and low pilothouse they were built with as destroyers. This difference proved the distinguishing visible characteristic between the APDs converted from 3in or 5in classes of destroyer escorts.In the end, only Rudderows were converted to APDs. Butlers were retained for convoy and escort carrier protection. The Navy ordered 51 Rudderows converted to APDs, the Crosley class. All but one of these ships was converted prior to being commissioned as destroyer escorts. One, USS *Bray* (DE-701), was commissioned as a destroyer escort from September 1944 until July 1945, before being sent to Charleston Navy Yard for conversion to an APD. The other fifty were converted in the shipyards where they had been built. The first of the Charles Lawrence APDs entered service in the first half of 1944. By July 1944, 10 APDs, all Charles Lawrence class, were in commission. By the end of 1944 an additional 39 conversions entered service. This included 13 of the Crosley-class vessels. The remaining conversions were completed in 1945.

While some of these ships saw service in the Atlantic and Mediterranean in World War II as destroyer escorts, all of their active duty (including

E

USS *ENGLAND* (DE-635)

A Buckley-class destroyer escort, *England* was the destroyer escort most successful in sinking enemy submarines. In May 1944, Navy intelligence learned the Japanese were sending I-16 to resupply Buin on Bougainville and setting up a picket line of seven submarines to spot any US invasion forces heading to Saipan. The Navy dispatched USS *George*, USS *Raby*, and USS *England* (all Buckley-class) to hunt down these submarines. Later an escort carrier hunter-killer group with four destroyer escorts joined the effort. Over 12 days, from May 19 through May 31 *England* sank I-16, RO-106, RO-104, RO-116, RO-108, and RO-105. At one point, after four other destroyer escorts attacked, but failed to sink RO-105, the division commander radioed *England*, "Oh hell. Go ahead England." *England* then sank RO-105 with its first hedgehog attack. *England* was awarded a Presidential Unit citation. CNO Earnest King, acknowledged *England* with the message, "There'll always be an *England* in the United States Navy." *England* continued escorting convoys in the Southwest Pacific through the rest of 1944, and in the Central Pacific between January and March 1945, participating in the invasion of Okinawa in April. On May 9, 1945, on picket duty, *England* was attacked by Kamikaze aircraft and seriously damaged. Following temporary repairs, England reported to the Philadelphia Navy Yard in July 1946 for conversion to an ADP. The work was cancelled after Japan's surrender. *England* was decommissioned in October 1945 and sold for scrap in November, 1946. *England* was named for Ensign John C. England, killed aboard USS *Oklahoma* at Pearl Harbor on December 7, 1941. This plate shows *England* in the Measure 22 camouflage it sported in May 1944.


DE635
DE635

USS *Scribner* (APD-122) was one of 50 Rudderow-class that became Crossley-class APDs. It is shown underway, in "green dragon" camouflage in 1945. It served in the Okinawa campaign. Note the low bridge superstructure. (USNHHC)

combat) after conversion to APDs was in the Pacific. They participated in amphibious operations from the Philippines to Okinawa. Three served as flagships; two for UDT teams, one as permanent flagship of the ADPs. Three destroyer escort ADP conversions were sunk during World War II or so badly damaged that they were scrapped in 1946. All three were sunk or damaged during Okinawa operations. As with the destroyer escorts, most APDs were mothballed in 1946 after World War II ended. Twenty-eight were transferred to foreign nations. A few APDs also saw service in the Korean War, including eight used as amphibious operations flagships, or were reassigned to the navy reserve as training ships. The US Navy disposed of all of them by the late 1960s.

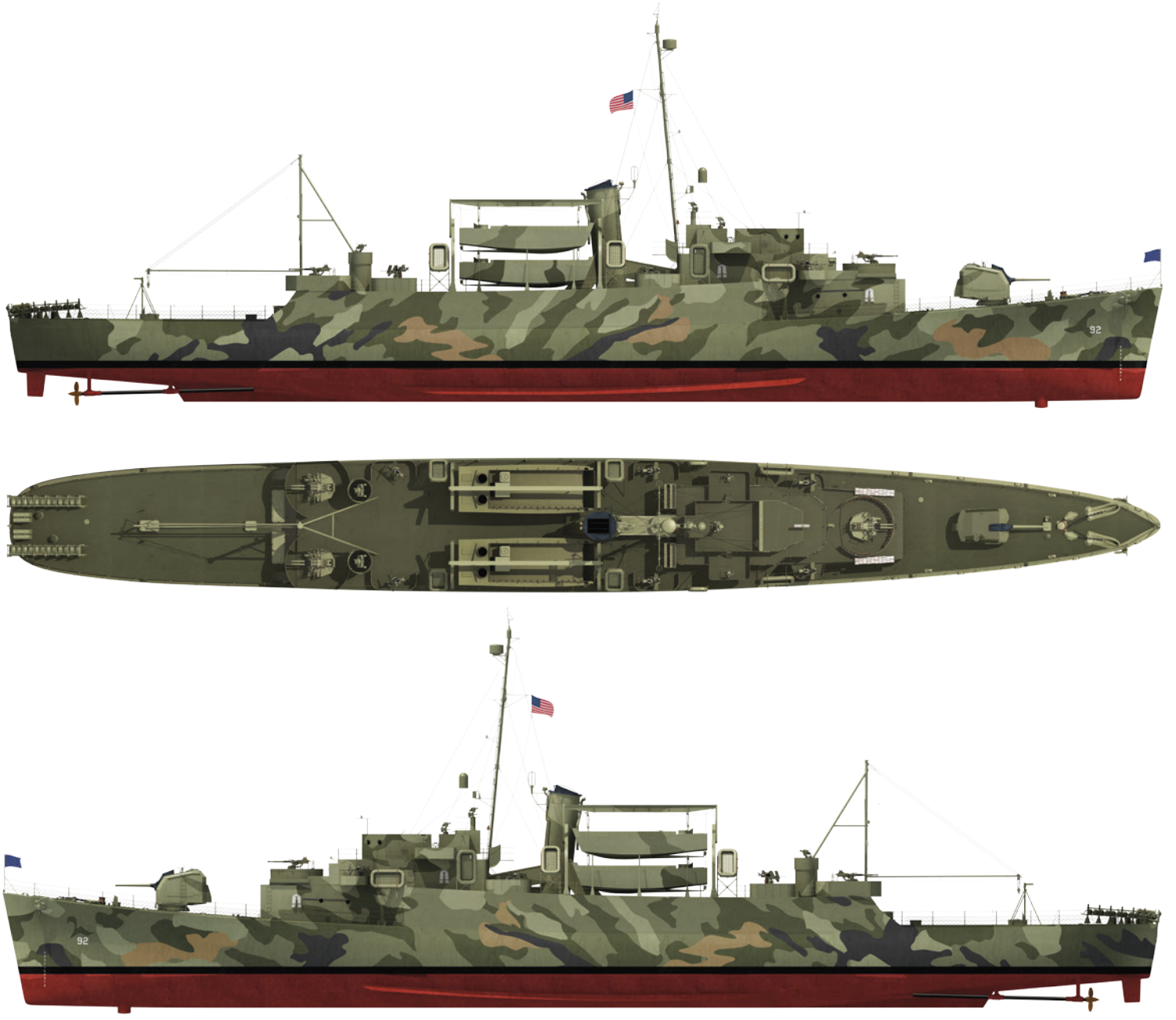
Radar pickets

Destroyer escorts were also converted into radar pickets. These conversions started in 1945 and continued through the 1950s. This went beyond using destroyer escorts as advanced pickets, ahead of the fleet to provide early warning of aerial attack. Rather, it was a rebuild of destroyer escorts, removing some weapons and replacing them with upgraded radars and adding space for the electronics and crew servicing them.

F

USS *REGISTER* (APD-92)

USS *Register* was one of 51 Rudderow-class destroyer escorts converted to Crosley-class APDs. These can be differentiated from the Charles Lawrence-class APDs converted from Buckley-class DEs, by the bridge structure. *Register* retained the low enclosed bridge of the Rudderows, while the Lawrences had the high open bridge of the Buckleys. The ship was named for Lt. Commander Paul J. Register, killed while serving as *Arizona*'s communications officer at Pearl Harbor. Laid down on October 23, 1943 at Charleston Navy Yard, *Register* was launched as DE-233 on January 20, 1944. Instead of being completed as a destroyer escort, it was chosen for conversion to an APD in July 1944, and commissioned as APD-92 at Charleston Navy Yard on January 11, 1945. Once it reached the Pacific, *Register* trained with underwater demolition teams in Hawaii, before going to Ulithu Atoll in May to support Okinawa operations. While off Okinawa it was attacked by kamikazes on May 21, 1945 and damaged. Repairs were completed by June 29, and *Register* escorted convoys for the rest of the war. Deactivated and placed in reserve on March 31, 1946, *Register* was struck from the Navy List on September 1, 1966, and sold to the Republic of China. Commissioned as *Tai Shan* in the ROC Navy on January 21, 1967, it served as an air defense frigate until stricken from the ROC Navy List in 1996. This plate show USS *Register* as it appeared in 1945, in a Measure 31 "Green Dragon" camouflage paint scheme, used by fast attack transports in World War II.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92

The need for better early warning was made clear by Japan's kamikaze campaign, which began in October, 1944. Obtaining earlier notice of incoming aircraft allowed better interception and lowered Allied casualties. Placing a ship with air-warning radars in advanced positions between the fleet and the location of potential attacking aircraft was effective. Normally this task was assigned to destroyer escorts and destroyers, especially destroyer escorts as they were the most expendable seagoing warships the US Navy had in 1945.

Due to the relative inferiority of the radars mounted, destroyer escorts lacked the radar range of ships with more powerful air-warning radar. At that time ships with the most powerful air-warning radar tended to be those least expendable: battleships, cruisers, and aircraft carriers. The solution was to equip destroyer escorts with better radar, even at the expense of armament. Work started on the first DER (Destroyer Escort, Radar) conversions in 1945. Twenty destroyer escorts, including ten originally scheduled to be converted to APDs, were scheduled for conversion to DERs in World War II. All began as Buckley-class steam-turbine vessels.

Plans indicate the DERs were to have been rebuilt in a manner similar to the APD conversions, with an enlarged superstructure to accommodate extra radar equipment and an enlarged combat information center. (This was one reason ten APD conversions were picked. They were already set to have, or were already in the process of gaining, the larger deckhouse.) The ships were to have been equipped with an SP radar similar to those carried on escort carriers. The unit was large enough to require a tripod mast, mounted aft of the funnel. They were to be fitted with two 5in/38 single-turret mounts, a quad 40mm, and three twin 40mm mounts and four twin 20mms. The hedgehog and K-guns were to be removed as weight savings, with a residual antisubmarine capability retained in the aft depth-charge racks. The work was scheduled for the New York Navy Yard, Philadelphia Navy Yard, and Brown Shipbuilding in Houston.

The work actually done appears to have been completed on an ad-hoc basis. Only seven DERs were actually completed. All ten of the APD conversions were cancelled on August 4, 1945. Three DE conversions were never finished and reverted to conventional destroyer escorts. Individual conversions varied, although all added a tripod mainmast where the torpedo tubes had been.

Ten destroyer escorts were scheduled for conversion to DERs – Destroyer Escort, Radar or radar picket ships. This included USS *Buckley,* which was the first conversion completed. Note the ship has had its original 3in battery replaced with a pair of 5in turrets. (USNHHC)

USS *Scott* (DE-214) appears to have been the first destroyer escort modified, albeit experimentally. From May to July, *Scott* tested experimental radar equipment at Key West, before being sent to Philadelphia for permanent conversion. The work was cancelled after World War II ended, before conversion began.

USS *Buckley* (DE-51 and DER-51) was the first one completed. It emerged from the conversion with its 3in/50 main battery replaced by two 5in/38 mounts. It also had the upgraded masts, but a

USS *Vandivier* (DER-540) was one of two Roberts-class steam-powered destroyer escorts converted to a radar picket for use on the Atlantic barrier as part of the "wet" Distant Early Warning line. It had less endurance than the diesel-powered DERs, and was retired after five years. (USNHHC)

superstructure largely the same as before the conversion. Work started in July 1945 and was completed in September. The other six were finished before 1945 ended. All but one were in reserve by fall, 1947, and the sole DER still active was being used as a training ship, not a DER.

The next set of radar pickets were converted in the 1950s. None of the World War II-era DER conversions were used in this round, most likely because they were steam turbine vessels. Unlike World War II where speed was viewed as an important feature, these pickets needed the greater endurance and lower maintenance offered by the diesel destroyer escorts.

The World War II radar picket conversions, including the Gearing-class destroyer conversions retained following World War II, were intended to provide early warnings to fleets. The DERs were intended to move with slow-moving invasion fleets rather than carrier and surface attack groups. But by the 1950s fears of Soviet bomber fleets armed with nuclear weapons attacking the United States were growing. Early warning radar was critical for detecting and intercepting these threats, and the earlier the warning, the more likely and effective interception would be. Land-based radars provided the necessary strategic depth only in the north, where radars could be based in Alaska, Canada, and Greenland. The Atlantic and Pacific coasts lacked this depth and contained critical population centers, and military and industrial targets.

USS *Calcaterra* (DER-390) was more typical of the "wet" DEW line conversions. It was Edsall-class and diesel-powered. It retained a hedgehog and a depth-charge rack. Its main battery is now a rapid-fire 3in in a turret. Note the array of different radars on both tripod masts. (USNHHC)

The solution was a ship-based radar network to provide distant early warning. The diesel-powered destroyer escorts were ideal as floating radar bases. They were large enough to mount the required radars, had excellent endurance at slow speeds, and were expendable. By the mid-1950s they were obsolete for their original purpose, but still had relatively new hulls. Two previously-unfinished Butler-class destroyer escorts were converted to DERs in 1954–55 for use as

distant early-warning radar pickets. This was followed by the conversion of ten Edsall-class ships in 1955–58. The only armaments retained by these ships were two 5in or two rapid-firing 3in guns in single mounts fore and aft. The superstructures were extended aft to provide accommodation and working space for the radar personnel, and tripod masts to mount radars replaced the fore and main masts.

These ships made up the Atlantic and Pacific barriers, providing early warning of a potential attack between 1955 and 1965. The diesel ship proved the most economical. They had longer endurance than the two steam DERs, which were retired in 1960. Eventually, patrol aircraft replaced the picket ships. Eight DERs retired when the barrier was abolished in 1965. Two others were retained for use in Operation *Market Time* off Vietnam, detecting ships attempting to smuggle supplies from North Vietnam into the south.

STATISTICS

These statistics are based on "as designed" plans, especially as regards to armament. Once it became apparent aircraft were a bigger threat than originally believed, the antiaircraft battery was increased, even to the extent of replacing torpedo tubes with more 40mm mounts. Additionally, on some ships, the aft twin 40mm were replaced with quad 40mm when those were available and single mount 20mm guns were replaced with twin 20mm. (Although the total count of 20mm barrels remained the same, with the number of mounts being reduced.)

Measurements are given in US units customarily used by the US Navy in World War II (feet, inches, pounds). Tons are long tons (2,240lbs) and knots are nautical miles per hour, where a nautical mile is 6,076ft or 2,025.333 yards.

G

JOHN C. BUTLER VS THE KAMIKAZES

John C. Butler was the lead ship of the John C. Butler-class destroyer escorts. Laid down at Consolidated Steel in Orange, TX on October 5, 1943, launched November 12, 1943, and commissioned March 31, 1944, *Butler* was named for a naval aviator who died at the battle of Midway. *Butler* spent its wartime career in the Pacific. It was a member of the screen of Taffy 3 at the Battle of Samar, where *Samuel B. Roberts* was sunk. *Butler* escaped largely undamaged, winning a Presidential Unit Citation for its efforts. Its most severe challenge came months later, in waters off Okinawa, when it fought a single-handed duel against ten Japanese kamikazes. On May 20, 1945, *Butler* had been on radar picket duty at an isolated patrol station, north of Ie Shima for nearly a month. That morning, eight to ten kamikazes, Mitsubishi A6M Zeros (Zeke) and Nakajima Ki-43 Hayabusas (Oscars) from *Kyushu*, spotted *Butler* and attacked. *Butler*'s crew was at battle stations and immediately engaged the incoming aircraft. It shot down two with its 5in guns before the aircraft could dive. The others began pressing their attack. *Butler*'s fire managed to flame a third kamikaze as it dived on the ship. It crashed close to *Butler*, after coming close enough to clip *Butler*'s radio antenna. A fourth plane attacked *Butler*, but its inexperienced pilot misjudged the approach. Burning and shedding pieces from previous hits, it exploded as it turned to hit *Butler*. A fifth kamikaze dove on *Butler*. *Butler*'s antiaircraft nailed the fifth attacker, sending it down in flames after it smashed the radar installation from *Butler*'s mast. It landed so close to *Butler*, the decks were showered with water and debris, including bits of the pilot's clothing. A sixth attacking kamikaze was chased off by Marine fighter aircraft sent to assist *Butler*. They sent the remaining aircraft scurrying. Surprisingly *Butler* required only minor repairs. *Butler*'s captain, John Pace, was awarded a silver star for his actions, and *Butler* experienced a less-eventful war, following the attack. This plate shows the action as the fifth kamikaze makes its attempt to hit *Butler*.

Evarts-class (General Motors Twin Diesel – GMT)

Displacement	1,140 tons (standard)
	1,450 tons (full load)
Length	289ft 5in (overall)
	283ft 6in (waterline)
Beam	35ft 0in
Depth	18ft 9in
Draft (full load	9ft 0in
Speed (design)	19 knots
Speed (trials)	21.5
SHP	6,000
Engines	Four General Motors Model 16-278A Diesels, electric drive
Fuel (design)	198 tons Diesel
Endurance (war)	4,150nmi at 12 knots
Complement	15 officers, 183 men (USN service)
Armament	Three 3in/50 caliber (3 x 1)
	Four 1.1in (1 x 4) or 2 x 40mm (1 x 2)
	Nine 20mm (9 x 1) (some ships carried seven or eight 20mm)
	No torpedo tubes
	One hedgehog launcher
	Eight 8 K-gun depth charge launchers (four on UK ships), two stern racks, 160 depth charges (200 on UK ships)

These ships were known as GMT destroyer escorts due to their propulsion and short hull destroyer escorts due to their length. (All other DE designs had a waterline length of 300ft.) One hundred five Evarts-class ships were ordered with 97 completed and commissioned and eight cancelled. Of the ships completed, 32 were transferred to the Royal Navy as "Captain"-class frigates; 65 became US Navy destroyer escorts. Two were transferred to foreign navies after World War II.

The Evarts-class *Brennan* (DE-13). Evarts were short-hull ships, 10ft shorter than the other five classes. It lacked room for torpedo tubes. Even without torpedo tubes it was a crowded design. (AC)

Buckley-class (Turbine Electric – TE)

Displacement	1,400 tons (standard)
	1,720 tons (full load)
Length	306ft 0in (overall)
	300ft 0in (waterline)
Beam	36ft 9in
Depth	20ft 0in
Draft (full load	11ft 0in
Speed (design)	24 knots
Speed (trials)	23.7
SHP	12,000
Engines	Two General Electric steam turbines, Two Foster-Wheeler water-tube boilers, electric drive
Fuel (design)	350 tons fuel oil
Endurance (war)	4,940nmi at 12 knots
Complement	15 officers, 198 men (USN service)
Armament	Three 3in/50 caliber (3 x 1) (some were re-equipped with two 5in/38, 2 x 1)
	Four 1.1in (1 x 4) or two 40mm (1 x 2) (UK ships substituted four 40mm (4 x 1) for torpedo tubes or in place of four 20mm single mounts. Sometimes a quad 40mm substituted for the twin 40mm for a total of eight 40mm.)
	Eight 20mm (8 x 1) (UK ships replaced up to four 20mm with single 40mm,but added single-mount 20mm on the quarterdeck and amidships for up to 15 20mm.)
	Three 21in torpedo tubes (1 x 3) (No torpedo tubes on UK ships)
	One hedgehog launcher
	Eight K-gun depth charge launchers (four on UK ships), two stern racks, 160 depth charges (200 on UK ships)

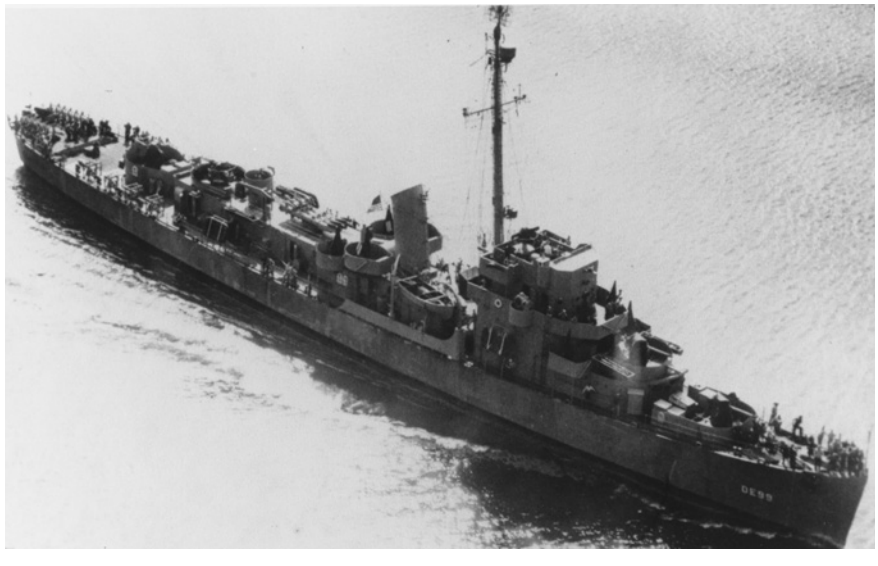
These ships were known as TE destroyer escorts due to their propulsion and were the first 300ft destroyer escorts. These were called long-hull ships. One hundred fifty-two Buckley-class destroyer escorts were ordered and completed. Of these, 46 were transferred to the Royal Navy as "Captain"-class frigates; 66 became US Navy destroyer escorts and 40 were completed as or converted to fast attack transports (APD). Fourteen were sunk or written off as unsalvageable during World War II. Fifteen were transferred to foreign navies after World War II.

USS *Buckley* (DE-51), name ship of the class. Buckleys replaced diesel powerplants with steam turbines. This required lengthening the ship 10ft to fit the steam engines. This yielded better performance. All subsequent classes used this long hull design. (USNHHC)

Cannon-class (Diesel-Electric Tandem drive – DET)

Displacement	1,240 tons (standard)
	1,520 tons (full load)
Length	306ft 0in (overall)
	300ft 0in (waterline)
Beam	36ft 10in
Depth	20ft 0in
Draft (full load	11ft 0in
Speed (design)	21 knots
Speed (trials)	20.2
SHP	6,000
Engines	Four General Motors Model 16-278A Diesels, electric drive
Fuel (design)	316 tons Diesel
Endurance (war)	10,800nmi at 12 knots
Complement	15 officers, 201 men (USN service)
Armament	Three 3in/50 caliber (3 x 1)
	Two 40mm (1 x 2)
	Eight 20mm (8 x 1)
	Three 21in torpedo tubes (1 x 3) (on some ships removed with additional AA added – 4 x 1 40mm)
	One hedgehog launcher
	Eight K-gun depth charge launchers, two stern racks, 160 depth charges

These ships were known as DET destroyer escorts due to their propulsion and were 300ft long-hull destroyer escorts. One hundred twenty Cannon-class destroyer escorts were ordered. Of these, 76 were completed as destroyer escorts and 44 cancelled. None were sunk during World War II. Twelve were transferred to the Free French or Brazilian navies during World War II and 38 to foreign navies after World War II.



The Cannon-class used the powerplant of the Evarts-class in the hull and with the weapons of the Buckley-class. While a workmanlike design, it was the slowest destroyer escort design. This shows USS *Cannon* (DE-99) early in its career. It was later transferred to Brazil. (USNHHC)

Edsall-class (Fairbanks-Morse reduction gear - FMR)

Displacement	1,200 tons (standard)
	1,490 tons (full load)
Length	306ft 0in (overall)
	300ft 0in (waterline)
Beam	36ft 10in
Depth	20ft 6in
Draft (full load	11ft 0in
Speed (design)	21 knots
Speed (trials)	20.2
SHP	6,000
Engines	Four Fairbanks-Morse diesels, electric drive
Fuel (design)	312 tons Diesel
Endurance (war)	9,100nmi at 12 knots
Complement	Eight officers, 201 men (USN service)
Armament	Three 3in/50 caliber (3 x 1)
	Two 40mm (1 x 2)
	Eight 20mm (8 x 1)
	Three 21in torpedo tubes (1 x 3) (on some ships removed with additional AA added – 4 x 1 40mm)
	One hedgehog launcher
	Eight K-gun depth charge launchers, two stern racks, 160 depth charges

USS *Stewart* as it appears today in Galveston, TX's Seawolf Park, *Stewart* is the last surviving Edsall-class ship, and one of only two destroyer escorts preserved as museums in the United States. (AP)

These ships were known as FMR destroyer escorts due to their propulsion and were long-hull ships. Eighty-five Edsall-class destroyer escorts were ordered, completed, and commissioned as US Navy destroyer escorts. Five were sunk or written off as unsalvageable during World War II. Two were transferred to foreign navies after World War II.

The Edsall-class was virtually identical to the Cannon-class. The major difference was the Fairbanks-Morse diesels used in the Edsalls. This is USS *Edsall* (DE-129) in Measure 22 Camouflage during its service in the Atlantic. (USNHHC)

Rudderow (Turbine Engine, 5in gun – TEV)

Displacement	1,650 tons (standard)
	1,810 tons (full load)
Length	306ft 0in (overall)
	300ft 0in (waterline)
Beam	36ft 11 1/2in
Depth	20ft 0in
Draft (full load	11ft 0in
Speed (design)	24 knots
Speed (trials)	27 knots
SHP	12,000
Engines	Two General Electric steam turbines, Two Foster-Wheeler water-tube boilers, electric drive
Fuel (design)	354 tons fuel oil
Endurance (war)	5,050nmi at 12 knots
Complement	12 officers, 192 men (USN)
Armament	Two 5in/38, (2 x 1)
	Four 40mm (2 x 2)
	Ten 20mm (10 x 1)
	Three 21in torpedo tubes (1 x 3) (on some ships removed with additional AA added – 4 x 1 40mm)
	One hedgehog launcher (230 shells)
	Eight K-gun depth charge launchers, two stern racks, 160 depth charges

These ships were known as TEV (V for the Roman numeral for "5") destroyer escorts due to their propulsion and armament and were long-hull ships. Two hundred sixty-eight Rudderow-class destroyer escorts were ordered, 133 cancelled, 81 completed, and commissioned as US Navy destroyer escorts and 54 were completed as or converted to fast attack transports (APD). None were lost during World War II. Twenty were transferred to foreign navies after World War II.

The Rudderow-class was a repeat of the Buckley with two 5in turrets replacing the Buckleys 3in battery, and a redesigned bridge. This shows USS *Rudderow* (DE-224) as completed in July 1944, two months after it was commissioned. (USNHHC)

The Butler-class was the last destroyer escort design in World War II. It replaced electric drive with geared turbines, but was otherwise identical to Rudderows. This is USS *John C. Butler* (DE-339) in some variant of Measure 32 in October 1944. (USNHHC)

These ships were known as WGT destroyer escorts due to their propulsion and were long-hull ships. Two hundred eighty-five Butler-class destroyer escorts were ordered, 74 completed, and commissioned as US Navy destroyer escorts and 211 cancelled. Four were sunk or damaged beyond repair during World War II. Two were transferred to foreign navies after World War II.

John C. Butler (Westinghouse Geared Turbine – WGT)

Displacement	1,350 tons (standard)
	1,745 tons (full load)
Length	306ft 0in (overall)
	300ft 0in (waterline)
Beam	36ft 10in
Depth	20ft 6in
Draft (full load	13ft 4in
Speed (design)	24 knots
Speed (trials)	24.15 knots
SHP	12,000
Engines	Two Westinghouse geared steam turbines, two "D" class boilers
Fuel (design)	347 tons fuel oil
Endurance (war)	4,650nmi at 12 knots
Complement	14 officers, 201 men (USN
Armament	Two 5in/38, (2 x 1)
	Four 40mm (2 x 2)
	Ten 20mm (10 x 1)
	Three 21in torpedo tubes (1 x 3) (on some ships removed with additional AA added – 4 x 1 40mm)
	One hedgehog launcher (230 shells)
	Eight K-gun depth charge launchers, two stern racks, 160 depth charges

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OSPREY PUBLISHING
Bloomsbury Publishing Plc
PO Box 883, Oxford, OX1 9PL, UK
1385 Broadway, 5th Floor, New York, NY 10018, USA
E-mail: info@ospreypublishing.com
www.ospreypublishing.com

OSPREY is a trademark of Osprey Publishing Ltd

First published in Great Britain in 2020
This electronic edition published in 2020 by Bloomsbury Publishing Plc

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A catalog record for this book is available from the British Library.

ISBN: PB 9781472839749; eBook 9781472839756
ePDF 9781472839725; XML 9781472839732

Index by Janet Andrew
Typeset by PDQ Digital Media Solutions, Bungay, UK

Osprey Publishing supports the Woodland Trust, the UK's leading woodland conservation charity.

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LOC – Library of Congress, Washington, D.C

USN – United States Navy

USNHHC – United States Navy History and Heritage Command, Washington D. C.

AC – Author's Collection

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AUTHOR'S DEDICATION

To the Galveston Naval Museum, home of *USS Stewart*, DE-235, and to Dick Hoffman, a ship modeler, a friend, and a man who served as an officer aboard destroyer escorts in World War II.

GLOSSARY

Bofors: An antiaircraft gun designed by the Swedish arms manufacturer Bofors and built under license in the US and Great Britain, which fired a 2-pound round 40mm in diameter.

Caliber: The ratio between the bore of the gun and the length. A 3in/50 caliber gun had a 3in bore and a 150in (12ft 6in) long barrel.

Depth Charge: An explosive-filled container, fitted with a fuse to detonate it at a prescribed depth. While some were streamlined, many were cylindrical, giving rise to the nickname "ash can" as they resembled metal trash cans used to haul coal ash.

Dual-Purpose Gun: A gun designed for both surface target and antiaircraft fire.

Fantail: The aft portion of the ship, typically between the aft deckhouse and the stern.

Flank speed: The maximum combat speed of a warship.

Forecastle: The front one-quarter to one fifth of a ship. The forecastle deck is the weather deck forward. On many ships the forecastle deck is higher than the main weather deck for better seakeeping.

Hedgehog: An anti-submarine mortar introduced in 1943. It has an array (typically 4 rows of 6) of contact-fused bombs fired over the bow of a ship.

Hogging: The condition when there is greater buoyancy amidships than at the ends. The ends curve down like a banana, straining the hull.

K-gun: A depth-charge thrower which launches a depth charge off one side of a ship. They are typically mounted in pairs, one on each side of the ship.

Low-angle guns: Guns incapable of elevating higher than 30 to 45 degrees, making them incapable of effectively engaging aircraft.

Oerlikon: A 20mm antiaircraft gun licensed from a design developed by the Swiss armaments company Schweizerische Werkzeugmaschinenfabrik Oerlikon and used extensively during World War II.